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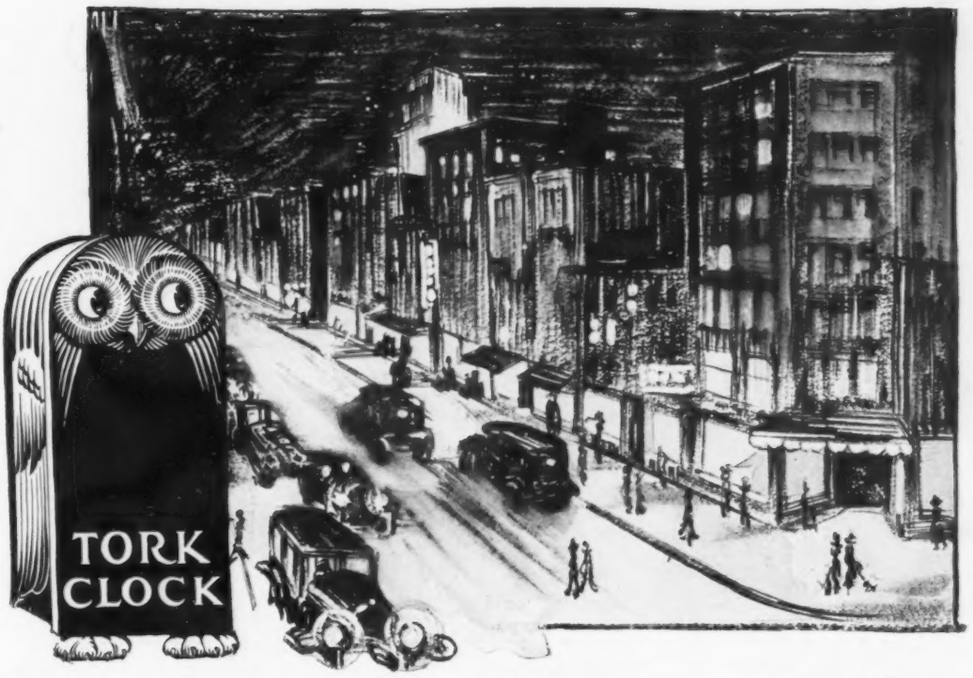
Journal of Electricity

Devoted to the Economic Production and Commercial Application of Electricity
IN THE ELEVEN WESTERN STATES



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Journal of Electricity

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IN THE ELEVEN WESTERN STATES

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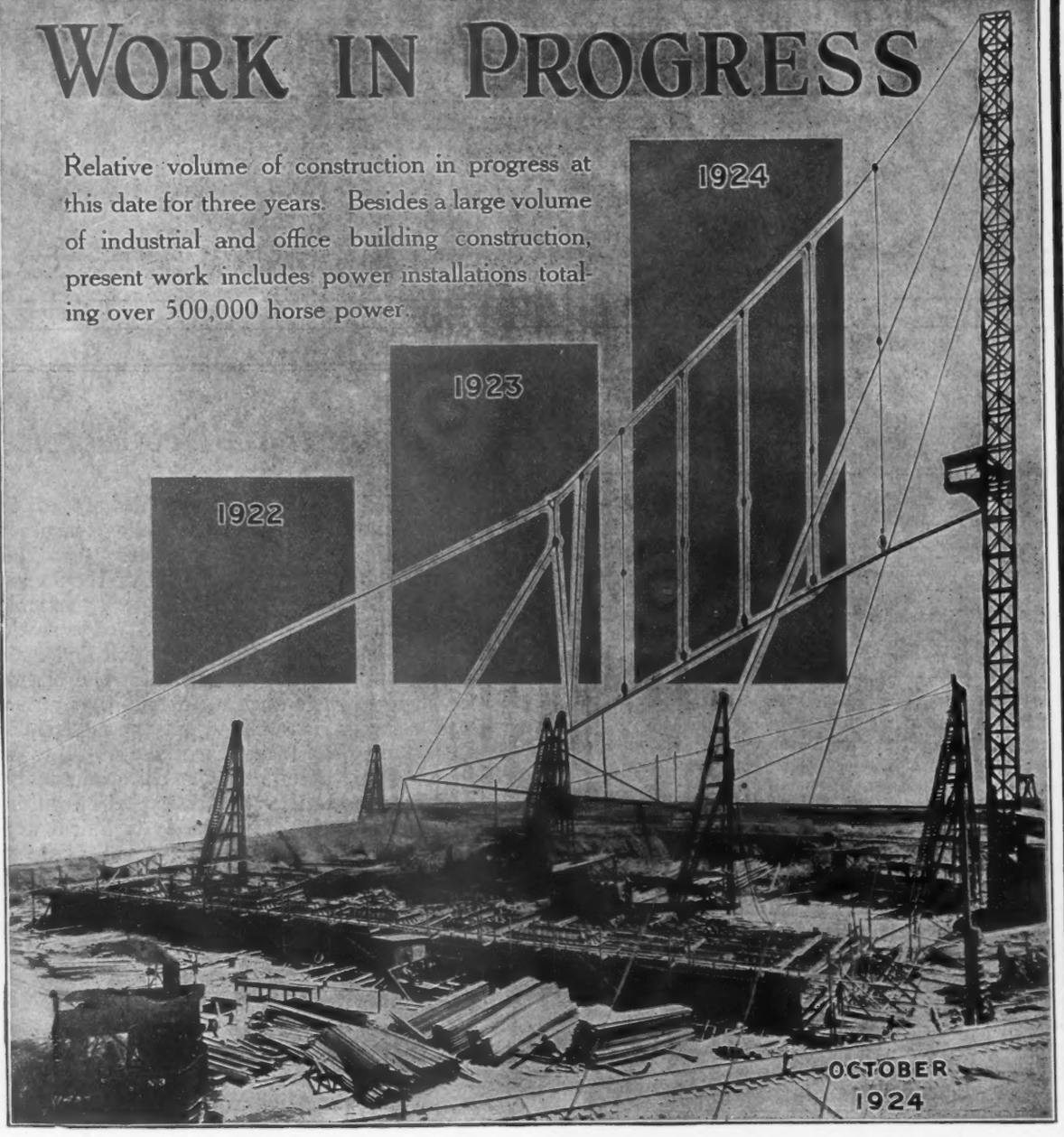
Announcing a New Service

WITH this issue the publishers of the Journal of Electricity take pleasure in introducing to its readers Ross Henninger, who has joined the staff of the Journal as associate editor. Mr. Henninger's particular function will be the development of a section dealing with construction, operation and maintenance in the central station field. Our circulation has grown to such an extent that an editorial analysis has pointed out the advisability of developing something especially useful to our readers along these lines. The editorial material to be presented under this classification will not concern itself with the severely technical work of the research engineer or of the designer; rather will it be the class of material that will be a real help to the power company engineers engaged in these three classes of work and which they can use in helping them to solve the problems that they encounter in the course of their daily toil.

Mr. Henninger brings to the Journal a trained mind plus the added advantage of some seven years' practical experience in the field. His work will be a process more of the collection of the experience of others for the benefit of all of our readers, rather than the creation of hypothetical situations for which there can be none other than equally hypothetical solutions. Practical is the word best suited to the sort of material that the Journal purposes to offer in this department. Incidentally, it is an expression by the publishers of the realization of their responsibilities to the field that they serve and their desire to meet the responsibilities in the fullest measure possible. We hope, therefore, beginning January 1 next to present to our readers a better, more useful Journal of Electricity than ever before.

WORK IN PROGRESS

Relative volume of construction in progress at this date for three years. Besides a large volume of industrial and office building construction, present work includes power installations totaling over 500,000 horse power.



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CHICAGO, 38 S. Dearborn Street
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The 1925 N.E.L.A. Convention

AS announced in the Nov. 15 issue of the Journal of Electricity, the 1925 convention of the National Electric Light Association will be held in San Francisco during the week of June 15. Naturally President Griffith's choice was received with enthusiasm by the utilities in that city, as it was in accord with the invitation extended by the Pacific Coast Electrical Association at its Coronado convention. Everyone will appreciate the difficult position President Griffith was in when he chose a city other than Portland. Bound by home ties and cognizant of the desire of the Portland civic and commercial associations to have the convention held in that city, he selected San Francisco only after consulting with the other officers of the N.E.L.A., who felt that the hotel accommodations in Portland would be inadequate to care for the large influx of delegates in addition to the regular number of summer tourists. President Griffith is to be commended for the broad-minded attitude he adopted in selecting any other than his home city.

In times past the Pacific Coast cities which have been fortunate enough to entertain delegates to the N.E.L.A. conventions have established enviable reputations for their hospitality. The year 1925 will prove no exception. Every utility in the two Pacific Coast geographic divisions of the association must realize that the obligations of hosts do not fall alone upon the central stations in the San Francisco Bay region. The duties of entertaining the Eastern visitors are mutual obligations to be assumed alike by every utility. If the 1925 convention is to go down as the most successful in the history of the association, everyone must cooperate to make good the saying, "The West knows how."

National Commercial Section Meetings

CALIFORNIA was honored during the week ended Saturday, Nov. 22, through its selection as the meeting place for the second session of the Commercial Section of the National Electric Light Association. The sessions were held at San Rafael under the general guidance of Chairman W. R. Putnam, vice-president and general manager of the Idaho Power Company, Boise.

It is the custom within the N.E.L.A. that the meetings of committees shall be held on the Atlantic Coast, the Pacific Coast and the Middle West as nearly as is possible, in order to afford an opportunity for local men to participate in the discussions and further to emphasize in fact as well as in theory that the N.E.L.A. is truly a national organization representative of every section of the country and not confined to such activities as center about the general headquarters of the association in New York City. Such meetings as the one recently concluded in San Rafael do a world of good to the industry and to the men who participate. In fact, it has been stated that quite as much good is brought about by the informal conferences and discussions that take place between individual members and small groups as in the more formal discussions at the organized meetings.

Another feature that was particularly gratifying to the local men who were charged with the responsibility of making the arrangements was the number of members participating from localities remote from San Francisco. Los Angeles and Fresno, of course, were well represented, while members from Portland, Seattle and Spokane, as well as a number of men from Chicago and New York, also manifested their interest in the work of the Commercial Committee by their presence.

The discussions were spirited and interesting. Many important subjects received the attention of the various committees. On another page of this issue is a full and complete report of the convention proceedings. To those men who are interested in the commercial phases of the industry and who were not fortunate enough to attend the meeting, we recommend a careful study of this report. Undoubtedly they will be able to glean from it ideas which can be applied to their particular business.

Romance in the Electrical Business

THE other day a man in the electrical business, in talking of the grief that attended some of his operations, said, in effect, "I enjoy these difficulties. In fact, I get more pleasure out of the hours spent in my business than I do out of any of the rest of the twenty-four, not excepting those spent with my family—and I tell my wife that. I spend every spare minute here at my shop and office. I have no hobbies nor outside interests." This man has found romance in his business and is pursuing it assiduously.

Not long after this conversation, a friend (not by the way, in the electrical business) confided that his business bored him. He considered it a necessary evil, and spent as little time at it as he possibly

could. His spare time was divided between his family, in which he took much pleasure and great pride, and a number of absorbing hobbies, not the least among which was the expert building of furniture for his new house—a hobby far removed from any connection with his business. This man has not found romance in his business and is seeking it elsewhere.

Anyone could pick between these two the winner in the race of accumulating a fortune, but it will take a philosopher to determine which will be the happier and which will get the most out of life. Chesterton said, "The center of every man's existence is a dream," and if this is so, perhaps it is true that each will get as much from life as his capacity for appreciation will admit, since each pursues his dream with equal vigor. We cannot recommend either course, but suggest that somewhere between the two extremes lies the ideal. For, while it is true that many of the recognized best things in life are abstract and so not purchasable, it is likewise true that most of us require the happiness that comes with the possession of a few material things. Material things cost money, and we get more money by working better at our business. So it would seem that if we can somehow tie our business in with our dream, or, in other words, find romance in our business, we stand a better chance to prosper and to attain such happiness as accompanies prosperity.

The electric light and power business, in all its branches, is rich in romance. If you have failed to sense it, then perhaps you are ill suited to your task and should search further for a life's work. In any event, we predict you will enjoy reading George J. Kelly's article in this issue. Mr. Kelly is one that not only has caught and held for his own enjoyment the romanticism in our business, but also has been able to convey an image of that romanticism to multitudes of the general public, thus doing a great good for his company, and, for that matter, for the industry. In the current article he has written engagingly of the making of a publicity motion picture that has caught the public fancy, and in his story are the germs of ideas that others may wish to adopt.

Capitalizing the Better Home Lighting Contest

ONE of the major problems confronting the industry is to capitalize commercially the public interest that has been aroused by the Better Home Lighting Contest. A thorough and painstaking job has been done in educating the public, especially the home-owners, on the proper standards of home lighting. National and local advertising, in fact, the resources of the entire industry, have been used in this campaign. So great has been the investment, both in money and man power, that the feeling is general that the good work done by the contest should be followed up by a definite sales campaign during the coming year.

Before such campaigns are undertaken, there are certain facts which should be remembered. In the first place, the electrical industry made a definite promise that the contest should not be touched by any commercial effort or atmosphere. The cooperation of the educational interests in making the campaign a success has been such a vital factor that to incur the suspicion or ill will of this group through the commercialization of the contest would be to preclude all possibility of future cooperation in similar undertakings.

During the discussions at the recent meeting of the National Commercial Section, a number of suggestions for capitalizing the contest were made. Intensive kitchen lighting campaigns without reference to the contest seem to be one means. Sales campaigns featuring portable lamps were also suggested. One central station executive proposed that speakers' bureaus be organized for keeping interest in better home lighting at its present pitch. Another suggestion was made that information on proper illumination be included in the curriculums of those schools best fitted to handle this subject.

However, whatever steps the industry takes in its endeavor to get returns from the contest, the greatest caution must be exercised to see that no reference to the contest is made in its sales campaigns.

Why Are Convention Banquets?

FEASTING of one kind or another plays a large part in the affairs of mankind. We read in history of Gargantuan repasts, of how Lucullus dined with Lucullus, and by way of antithesis of the Barmecide feast made famous in the Arabian Nights. Since an operation on the constitution of the United States has rendered further devotions at the shrine of Bacchus a useless sort of task to most of us, it is assumed that before long, people will learn to eat to live rather than to live to eat. Nevertheless, convention's decrees and even the decrees of conventions persist long after their demise has become at least somewhat overdue, all of which leads up to the more or less pertinent question, of what use, if any, is the convention banquet.

The place of the banquet in the convention scheme of things is generally at the tag end of a more or less perfect week when everyone is tired out from deliberations and unremitting attendance at meetings of one kind or another where abstruse and involved subjects are discussed in such a manner as to require a degree of concentration that is bound to produce a certain amount of brain fag. Therefore, when the delegates have become worn with delegating and the "con" has been entirely removed from conference, the suffering and perspiring delegates must perforce don their waiter's uniforms, sit through a more or less interminable table d'hote and be bored by a speaker or series of speakers, to say nothing of a toastmaster, who tell them a lot of things that they do not care to hear and at a time when they would rather be making up their quota of sleep or possibly tripping the light fantastic to the more or less harmonious moans and sobs of the saxophone.

We have all sorts of societies for the prevention of one thing or another. One may not be cruel to children or to animals without coming within the pale of the law; why not then organize a society for the prevention of cruelty to convention delegates and for the suppression of the convention banquet? In this age of prevention one might go much farther and do a great deal worse.

A Handbook of Safety Rules

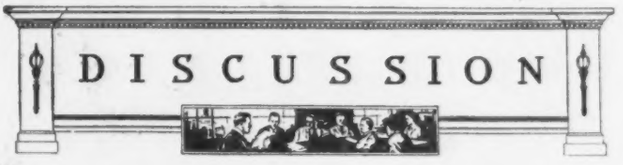
WITH several hundred pages in some of the safety orders issued by state commissions, it is out of the question for anyone to memorize the contents. The trained engineer must consult the book frequently for his own guidance, and the layman who would comply with its regulations must make a special study of its provisions. Even then, he will find that the language in many cases is technical and difficult for any but a specialist to understand. It is impossible in such a work to specialize too greatly even where rulings in a particular field might be more useful than the mere statement of fundamental principles. Minimum requirements alone are considered, of course, and no information may be obtained from this source as to the merits of the desirable installation above this standard.

A code of safety orders, in other words, does not take the place of a handbook for popular use. There is more than one field in which such a handbook would be of advantage. The rural user of electricity, for instance, is often guilty of inferior electrical installation, from sheer ignorance of good practice. A bulletin which might be published in pamphlet form under the joint auspices of the Industrial Accident Commission and the insurance interests and which would give a set of simple rules for such installations would be of genuine value. Such a compilation would undoubtedly do much to cure the present more or less unsatisfactory conditions in rural installations.

California and the National Farm Survey

WITH the complete organization of the California Committee on the Relation of Electricity to Agriculture, that state is in a position to play an important part in the national study which is being made to determine to what extent electricity can be applied economically on the farm. In no section of the world has a greater use been made of electrical energy on the farm than in that commonwealth. Yet agricultural and central station authorities feel electricity will be of even greater service after careful study of the farmer's problems has been made.

As recounted on another page of this issue, the survey brings together central station representatives, manufacturers, the farmers themselves through the Farm Bureau Federation, the State University and the Railroad Commission. Already one important result has been accomplished in the establishment of relations between the electrical industry and the state university. Funds for conducting the present survey are being supplied by the central stations while a member of the staff of the Agricultural College will act as executive secretary. However, the greatest result achieved will be a closer understanding between the central station and the farmer of their mutual problems.



Earliest Hydro Development in Idaho Constructed in 1887

To the Editor:

Sir: I notice that you have been publishing some brief accounts of early hydroelectric developments in the West, and it has occurred to me that you would be interested in a brief description of one of the pioneer developments in the Intermountain territory.

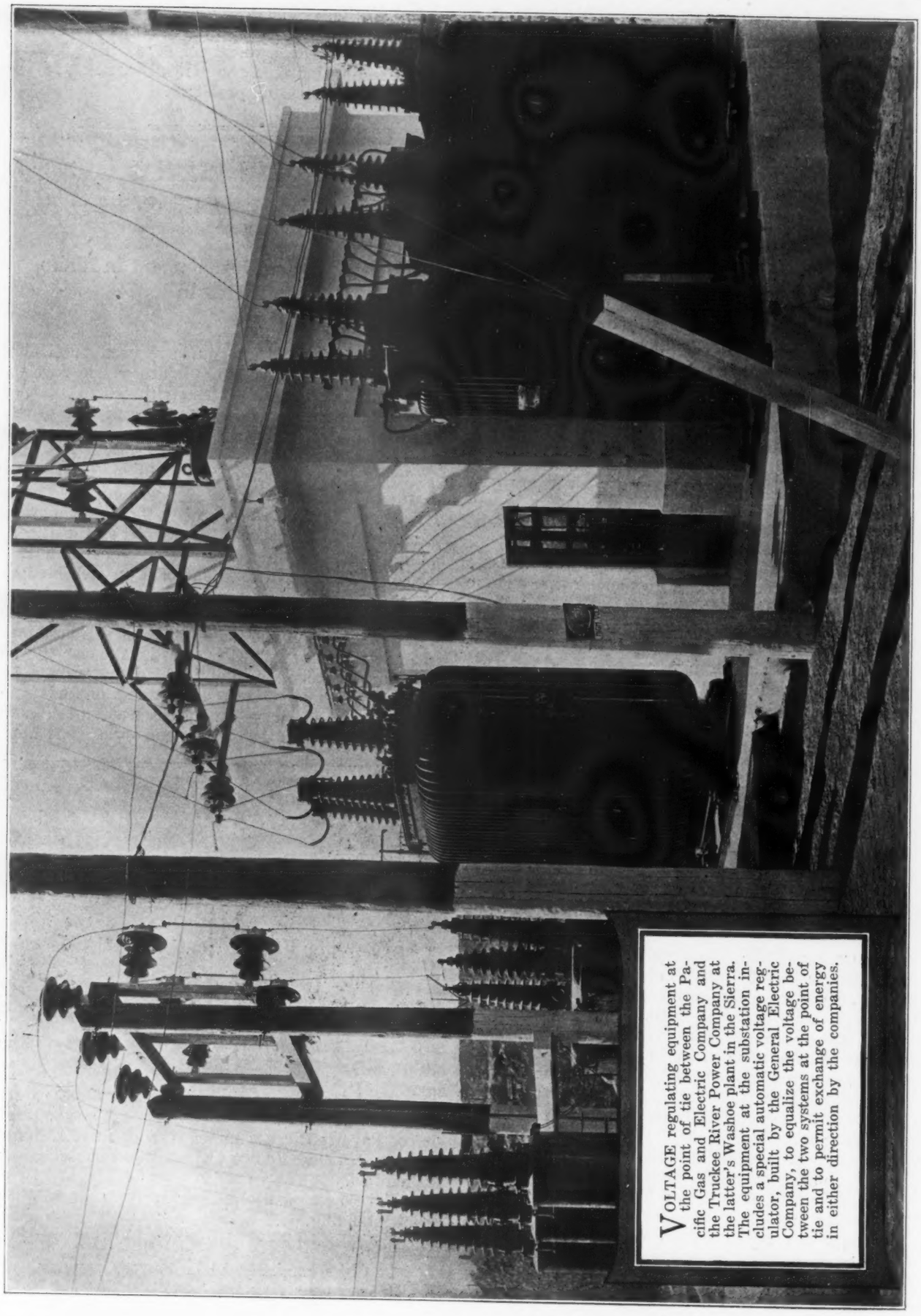
The first hydro development in southern Idaho of which I have any knowledge was installed near Boise in 1887. The water supply for this plant was taken from an irrigation ditch known as the Ridenbaugh Canal, and the wheels were operated under a head of 62 ft. The first installation consisted of two 15-kw. Edison direct-current generators. About 1889 or 1890 these machines were replaced with two 30-kw. machines of the same type. At various times during the decade following, additional capacity was added until finally the total installation consisted of six 30-kw. direct-current generators, of the type above mentioned, three Thompson-Houston arc lamp machines and one 100-kw. mono-cycle generator.

Building that housed the first hydroelectric plant in southern Idaho

This plant served the City of Boise and vicinity until about 1903, when the development of a larger plant on the Payette River rendered it inoperative. Thereafter it was closed down and has been subsequently dismantled.

The power plant building for this installation still is standing.

F. J. RANKIN,
Chief Engineer, Idaho Power Company.
Boise, Idaho, Nov. 20, 1924.



VOLTAGE regulating equipment at the point of tie between the Pacific Gas and Electric Company and the Truckee River Power Company at the latter's Washoe plant in the Sierra. The equipment at the substation includes a special automatic voltage regulator, built by the General Electric Company, to equalize the voltage between the two systems at the point of tie and to permit exchange of energy in either direction by the companies.

The Motion Picture—a Medium for Utility Publicity

By George J. Kelly
Land and Tax Agent, Portland Electric Power Company, Portland, Ore.

AS an advertising vehicle capable of reaching a large field in a compelling manner, the moving picture is unexcelled. The problem is to produce a picture that will find favor with distributors because of its excellence as entertainment. How well the story of power generation and transmission lends itself to the genius of the scenario writer is attested by the success of the Portland Electric Power Company's two ventures into movieland, and the guiding spirit of these ventures has written entertainingly of some of the possibilities of the subject in general, and of some of his experiences with his own productions.

THE production of motion pictures by utility companies for publicity purposes is not by any means a new idea in their general scheme of advertising. However, this publicity medium apparently is not used to advantage to the extent that it deserves, mainly on account of the difficulty of getting distribution through the motion picture houses after the film has been produced. Any film of an advertising nature is looked upon with disfavor by the exhibitor at the big downtown theater, and this feeling extends even into the smallest suburban show house. Not that advertising space cannot be purchased under the guise of news weeklies or educational pictures, but in general it is true that direct advertising is barred from the movie world.

The reason for the antagonism of the exhibitor to advertising matter on his program is that he knows his audience resents being compelled to see such matter when it has paid its admission money to be entertained. A purely advertising film, even if it were possible to have it shown, would do more harm than good to the subject advertised. Thus, after such a film has been produced at a good round cost, the distribution ordinarily is limited to private gatherings, lectures, dinners, and similar functions; and such showings hardly warrant the cost of producing the film.

But if a film can be produced that a downtown movie house in a city the size of Portland, Ore., will show in a week's run to something over 30,000 people, and that in the course of distribution over the neighborhood picture houses and through country towns will eventually be viewed by an audience numbered conservatively in the hundred thousands, it can be understood that the motion picture offers a broad field for effective publicity. Such publicity gets particularly good results because it receives the undivided attention of an audience that is relaxing and enjoying itself. In no other form of publicity is the mind of the audience so completely concentrated on the subject matter as in the case of an enjoyable and attractive picture.

The utility company, therefore, should produce such pictures as will carry the desired message to the public and at the same time provide an attractive and educational entertainment which both the exhibitor and the most critical audience will welcome and enjoy. Such a picture should contain no direct advertising; its publicity strength should lie in the suggestion carried in the picture as a whole. That this can be done successfully is shown in this company's own little experience in this line.

For instance, what is more wonderful in pictorial motion story than the tale of hydroelectric development? The little drop of water from the melting glaciers on the far-away mountainside is joined by other drops from melting snows and from rain. At the joining of the drops the tiny rivulet is formed and begins its downward journey through canyons of forest and woodland, growing ever greater as it rushes on, with wind, rain, storms and other forces of nature at work to augment it until the mighty river is formed. Then the constructive genius of man steps in, damming the stream and harnessing the mighty forces of nature to produce for mankind its great servant, electricity, a necessity to the modern community in its countless uses, while back of it all stands the electric company in earnest endeavor to do its part in the upbuilding of that community.

Such a story as this was told in the two-reel film, "The Romance of a Raindrop," produced by the Portland Electric Power Company about three years ago. The welcome that this film received from the exhibitors and the public seemed to prove, as well as emphasize, the fact that there is an established demand in the motion picture world for pictures of this type. This picture had a wide circulation among the movie houses of the large district in which the company operates, and after three years is still in demand for gatherings of a public nature.

Encouraged by the success of the first attempt at movie making, about two years ago, at the beginning of the work on the Oak Grove River hydroelectric development, the company undertook the

production of a second film, entitled "Modern Pioneers." It was the thought that through the medium of this film the message of the immensity of this project could be carried to the public.

Two Kinds of Pioneering Represented in Film

As a preface to the picture and for the purpose of furnishing a comparison to make the rest of the story more vivid, the tale of the original pioneer was told, with all the settings of covered wagons, Indians, wild animal life, log cabins, forests and streams, and with the beautiful scenery of Oregon as a background. Into this setting was woven the story of the modern pioneer in his equally strenuous efforts to subdue the wilderness for the benefit of mankind in the construction of a great hydroelectric plant. The motion picture camera intermittently clicked on the Oak Grove project during the two years consumed in its construction, so that at the completion of the work a finished film that showed the progress of the work in all its important stages was had.

Typical scenes from the moving picture "Modern Pioneers" portraying the Oak Grove project of the Portland Electric Power Company, showing the character of the country.

Growing before the eyes, across the primeval river out there in the forest rises the dam to completion, and with the closing of the gate the great river is impounded, ready for its work to begin. Then

"The axe and the gun carved the way through the wilderness."

grow miles and miles of pipe line in all details of construction until the last link is completed. Up from nothing comes the power house, and at last the mighty turbine is set and ready. In a test the great relief valve, under a head of nearly a thousand feet, is opened, and the entire Oak Grove River is thrown hundreds of feet through the air. The valve is closed; the turbine whirls; the great plant is finished. Electric energy races over miles of steel transmission poles to the instantaneous service of distant cities—a thrilling tale of man's efforts to produce for mankind's benefit, and one that can be fascinatingly told through the pictorial medium of the movies.

Experiences of the Director

The scenario of "Modern Pioneers" was written and directed by the writer, and the photography was by H. H. Brownell, a well-known local camera man famous for his scenic films of the Northwest country. During the taking of the picture both Brownell and the writer received a few thrills, not appearing on the celluloid, that promised to terminate two promising Hollywood careers.

As the "Old Pioneer" was felling a mighty tree as potential material for a log cabin, the tree, contrary to the plans of the efficiency engineer handling the ax, insisted on falling in the wrong direction. When the dust and branches were cleared from the atmosphere, the artists were seen to have made a lucky fadeout, none too soon, with all and sundry of the camera tools. As a result of the accident, the near-by telephone and power pole line and a part of the railway track of the great Oak Grove development had to be redeveloped; and later the general superintendent indulged himself in a short, pointed scenario all his own to express his opinion of motion pictures in general and "Modern Pioneers" in particular.

On another occasion, when "shooting" the tunnel in the top of the penstock hill nearly a thousand feet above the power-house site, a family-sized boulder

dropped from the roof of the tunnel, falling between and betwixt the camera and its operators, but fortunately sparing both to posterity.

One other time the pearly gates yawned wide to receive an addition to its motion picture colony, if any there be within the heavenly precinct. One rainy day the gasoline speeder, homeward bound at a fast clip with camera, director and operator on board, was folded into the bosom of a freight engine. When the splinters, pieces of iron and other flying parts, including two aviating operators, had settled from the revolving atmosphere, it was found that the luck still held, and again it was demonstrated that the scenario of "Modern Pioneers" was a good deal less spectacular than some incidents of the actual taking thereof.

Success Is Attained

Withal, it was an exceedingly interesting undertaking to build up the picture from a disconnected group of incidents and work them into a connected story that would stand the acid test of criticism from the exacting movie-going public. For out of it all grew a picture that, upon its first production in Portland's largest motion-picture house, the Liberty Theater, met with the following opinion from C. S. Jensen, of Jensen & Von Herberg, one of the largest exhibitors of motion pictures in the Northwest:

"The picture's presentation of Oregon's gorgeous scenery, coupled with a graphic demonstration of the utilization of some of our state's vast resources, makes it one of the best scenic and educational subjects which I have ever seen. I am sure it will prove a welcome addition to any motion-picture program presented anywhere, but especially in Oregon."

This shows that in the great motion-picture world there is a demand for such a type of pictures as "Modern Pioneers." The movies present a tremendous field for the education of the public to a better understanding of what the local utility company is doing or is trying to do; for explaining why it is impossible to do some of the things that the public demands, and for carrying to the public the message of the utility's great constructive efforts toward the upbuilding and progress of the community.

Distribution and Cost

When the picture houses have all exhibited the picture, there still remains a wide circulation among the community clubs, associations, churches, schools and other organizations, many of which now have their own motion picture projectors; and it is surprising to note what a constant demand comes for the showing of the film at such gatherings. In fact, it is necessary to take good care of a film to keep it from wearing out before the expiration of its active usefulness.

The cost of production of such a film is small in comparison with that of other forms of publicity. The cost of an active advertising campaign in the newspapers, extending over a period of a week or two, would pay the entire cost of the production of a two-reel film; and the film will live long after the newspaper advertisments are forgotten.

It must be borne in mind, however, that the production and distribution of the motion picture have been reduced to an exact science. The drawing power of the film must be viewed from the angle of its appeal to the public and from that of the box office. Therefore, the utility that desires to present its message to the public must exercise great care in the preparation of its material. This should not be a difficult problem, for the development of a hydroelectric project, from its inception to the final production of the current that lights cities and towns and turns the wheels of industry, is in itself so vital and romantic a story that, properly presented, it should arouse the interest of the most jaded picture theatergoer. The success attained by the Portland Electric Power Company and other organizations points the way to a new and particularly attractive medium of contact between the utility and the consumer.

"Modern Pioneers" tells the story of the native Indians and the coming of "the white man, a defiant and heroic battler coursing Westward," and shows "The village that was Portland."

Utilization of Electricity on California Farms

By L. J. Fletcher

Division of Agricultural Engineering, College of Agriculture, University of California.
Chairman, California Committee on the Relation of Electricity to Agriculture.

To determine to what extent electricity is applied to agriculture in California a committee, headed by Mr. Fletcher and representing the agricultural and electrical interests in the state, has been appointed. The committee will make a thorough survey of existing conditions and will make recommendations for future usage of electricity on the farm. In this article, Mr. Fletcher describes the organization plan that will be followed.

COMPREHENSIVE investigation on the application of electricity to agriculture is a matter of nationwide importance. That the swing of the economic pendulum is distinctly toward the farmer and his problems was indicated in the late presidential campaign. Recognition has become general that as the farmer prospers so prospers the nation, and within the last three or four years many movements have been instituted looking toward an improvement in rural conditions. Thus it is only natural that the electrical industry should sooner or later turn its attention to the farmer and his problems, because electricity, with its peculiar characteristics and ease of distribution, offers a potential source of power to America's largest industry almost unlimited in its scope.

In so far as the electrical industry is concerned, the movement is little more than a year old. In 1923 representatives of the National Electric Light Association met with members of the American Farm Bureau Federation to determine ways and means of answering the question, "What can electricity do for agriculture?" This conference brought out several fundamental facts. The development of the further use of electricity on the farm required answers to two important questions, namely: How can service be supplied to the farmer and what is involved in its establishment? How can service be utilized by the farmer so that it will be profitable to him?

The conference proposed that a cooperative organization representing both the electrical and agricultural interests be formed to study the problem and put in form available for use by anyone, the following:

(a) The various methods by which electrical energy can be profitably utilized on the farm, including research studies of equipment characteristics as well as methods.

(b) The facts regarding transmission lines and electrical equipment needed to furnish the farmer electric service comparable in quality with that already supplied the industrial field.

The purpose of the proposed work was set down as the ascertaining of facts. No selfish propaganda of any interest or class would be allowed to enter.

The final outcome was the formation of a national Committee on the Relation of Electricity to Agriculture with Dr. E. A. White, an eminent agricultural engineer, as director. The committee included representatives from the following organizations:

American Farm Bureau Federation.
National Electric Light Association.
Power Farm Association.
American Society of Agricultural Engineers.
U. S. Department of Agriculture.
U. S. Department of Commerce.
U. S. Department of Interior.

The chief task of this committee was to give purpose and direction to the work necessary in determining the maximum economic uses of electricity in agriculture. It proposed to organize the work on a state basis, setting up state committees similar in organization to the national committee, where sufficient interest in the problem was found. Minnesota, Alabama, South Dakota, Kansas, Iowa, California and Oregon are among the states where work is actively in progress.

California's participation in the work had its inception in May, 1924, as the result of a meeting called in San Francisco at the request of Dr. White, director of the national committee. This meeting was attended by leaders of the California Farm Bureau Federation, executives of most of the California central stations, members of the staff of the College of Agriculture of the University of California and representatives of many of the large electrical manufacturers. Among the things brought out at this conference was the fact that California has developed the application of electricity on the farm to a greater extent than any other section of the nation, if not of the entire world. This is due primarily to the fact that many California farms require irrigation and that electricity was the most readily available and cheapest sources of power for driving the irrigation pumps. The second contributing factor has been the development of an elaborate interconnected system of transmission lines which traverse practically every section of the great interior valleys, which are the chief agricultural regions of the state. Thus power has been available in the rural districts, the only requirement being the installation of suitable substations and transformer equipment and the construction of distribution lines.

The extent to which California has utilized the electric power thus made available on her farms is shown in the following figures, which give a fairly comprehensive picture of the use which is being made of electricity by the farmer:

Total number of farms (1920 census)	**117,670**
Total number of rural power consumers (1923)	**26,915**
Total number of electric lighting, cooking and other domestic service consumers outside of incorporated cities and towns (1923)	**93,156**
Total electric energy (kw-hr.) consumed on California farms (1923)	**421,646,000**

Over one-third of the total power (animal and mechanical) used on the farms of California is furnished by electric motors.

At the San Francisco meeting, which was presided over by A. C. Hardison, president of the California Farm Bureau Federation, a committee was appointed to make investigations concerning the use of electricity in California agriculture. The personnel of the California Committee on the Relation of Electricity to Agriculture follows:

L. J. Fletcher, Agricultural Engineering Division, College of Agriculture, University of California, chairman.
J. J. Deuel, Law and Utilities Department, California Farm Bureau Federation.
B. M. Maddox, district manager, Southern California Edison Company, Visalia.
C. A. Utley, the Pelton Water Wheel Company, and president of the Western Irrigation Equipment Association.
A. M. Frost, commercial manager, San Joaquin Light & Power Corporation, Fresno.
J. W. Nelson, secretary, California Farm Bureau Federation.
H. M. Crawford, sales manager, Pacific Gas and Electric Company, San Francisco.
N. R. Sutherland, Pacific Gas and Electric Company, San Francisco.
E. O. Shreve, district manager, General Electric Company, San Francisco.
B. D. Moses, Agricultural Engineering Division, College of Agriculture, University of California, executive secretary.

At a subsequent meeting of the above committee a plan was proposed for definitely tying in the work of this committee with the College of Agriculture of the University of California.

Officials of the college proposed to assign Professor Moses to the task of organizing and directing the work in California, the California power companies having guaranteed sufficient funds for the conduct of the work. Professor Moses' duties as executive secretary of the committee include the correlation of the work of the committee, the gathering and centralizing of data, the organization of projects and preparing for publication of articles describing the work and giving the results.

The committee determined as its objects the following:

(1) To find and give publicity to all of the efficient ways of utilizing electric energy on California farms.

(2) The organization of projects for
  (a) The securing of data concerning present uses of electricity in California agriculture.
  (b) The establishing and carrying out of various investigations based on new and untried uses for electric energy on the farm.

Four general project committees were organized, the first of which, with J. J. Deuel as chairman, will collect data on existing uses of electricity on California farms. The second, headed by B. M. Maddox, will determine the methods employed by California utilities in rate making for rural districts. The third, of which E. O. Shreve is chairman, will study the utilization of electricity in the farm home. The fourth, headed by C. A. Utley, will investigate the utilization of electricity in agricultural production. The third and fourth committees have established a number of subcommittees, each responsible for a definite project, such as farm home lighting, irrigation pumping, dehydration, poultry incubation, brooding, etc. The duties in detail of the four committees follow:

(1) Cost and other data concerning the present utilization of electricity on California farms. This committee is to secure all possible information concerning present uses, including such items as actual costs and costs as compared to other kinds of power; kinds of uses; number of users and amount of electricity used; hours and time of use; load factors; cost of equipment; power requirements; efficiency, and any other data which will aid in determining the present economic uses of electrical energy.

J. J. Deuel, chairman.
Lloyd Henley, San Joaquin Light & Power Corporation, Fresno.
A. G. Cage, Southern Sierras Power Company, Riverside.
N. R. Sutherland.
W. C. McWhinney, Southern California Edison Company, Los Angeles.

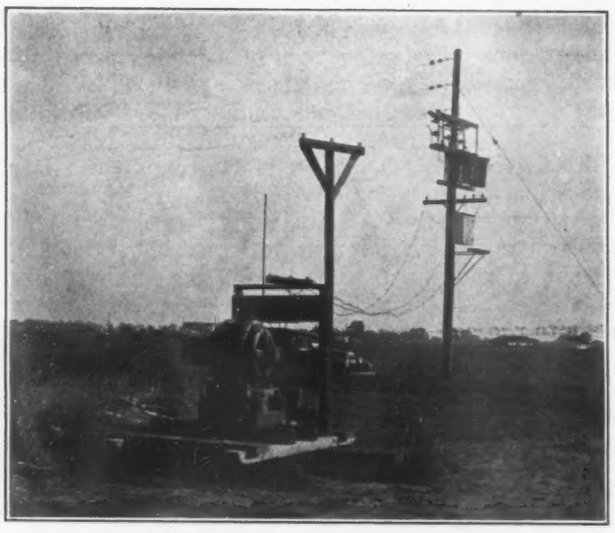
(2) How the electric public utilities in California are regulated and how rates are made. This committee will study the development of contracts and rate making as an aid to other states, together with a statement of the present situation, policies involved in rate determination, etc.

B. M. Maddox, chairman.
J. J. Deuel.
Robert Sibley, executive manager, California Alumni Association, University of California.
H. A. Barre, Southern California Edison Company, Los Angeles.
A. V. Guillou, California Railroad Commission, San Francisco.

(3) Utilization of electricity in the farm home. This committtee is to make a complete investigation of the use of electricity in the ways in which it will improve living conditions, lighten the work in the farm home, and in general bring to the farm the conveniences now enjoyed in the city home.

E. O. Shreve, General Electric Company, San Francisco, chairman.
Percy Booth, Edison Electric Appliance Company, Los Angeles.
J. P. Fairbank, agricultural engineer Extension Specialist, University of California, Davis.

(4) Economic utilization of electricity in California agriculture. This committee is to make a study of the ways in which present utilization may be improved, especially as it is applied to production on the farm. It is also to study how electric energy compares in cost and service with other types of energy. Investigations may involve the design and testing of special equipment better adapted to electrical operation. This committee will also investigate the possibilities of manufacturing on the farm.



Portable motors and transformer banks will receive the attention of the committee. Here is a 50-hp. portable motor used for miscellaneous pumping and for running an ensilage cutter and elevator on one of the large California ranches.

The work of this committee is distinguished from that of No. 3 in that its investigations will not deal with those phases of rural electrification which have to do with the personal satisfaction or general improvement of living conditions derived from its use. The studies will be made very largely on the basis of cost and service.

C. A. Utley, chairman.
R. A. Balzari, Westinghouse Electric & Manufacturing Company, San Francisco.
J. W. Nelson.
H. M. Crawford.
B. D. Moses.

Committee No. 1, which is charged with securing definite basic information on the present utilization of electricity in agriculture in the state, has prepared two sets of questionnaires, one to be answered by power companies themselves, dealing with such items as total number of agricultural consumers, both light and power; agricultural load in kw. and the annual kw-hr. consumption for this class of service. The second questionnairs is to be prepared in the form of a postcard and will be mailed out to all agricultural electric consumers in California with a view of determining the size and character of individual installations and applications, including the extent to which farm homes are equipped with ranges, water heaters and other appliances as well as the size and capacity of the irrigation pumps, motor-driven feed cutters, silo fillers, shop motors, grinders, etc. The questionnaire to the agricultural consumers themselves will emphasize the importance of the work, its noncommercial character and the fact that the California Farm Bureau Federation is actively sponsoring the investigations.

Committee No. 2 has already begun work on studies of the rate-making methods employed by California utilities and on the contract forms used for rural consumers.

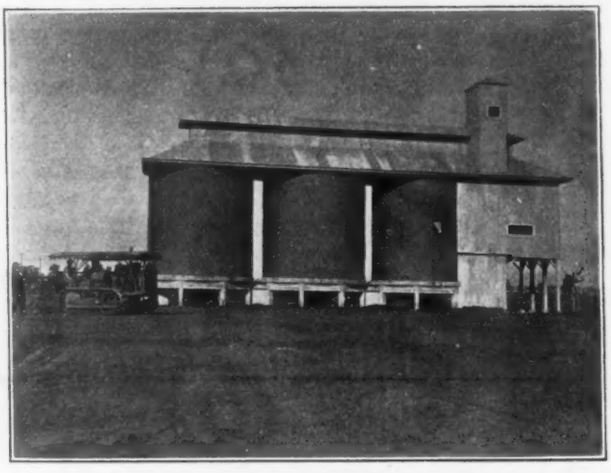
The work of committee No. 3 is divided into four classes, and a study will be made of the extent to which electric energy is used for cooking, water heating, washing, cleaning and other domestic services. Other studies will be made of its application to refrigeration, heating and ventilation, and water supply.

The investigations of committee No. 4 will deal with the following:

(1) Pumping for irrigation.
(2) Finishing and processing of farm products and dehydration.
(3) Poultry equipment.
(4) Dairy farm equipment.
(5) Power for the farm shop.
(6) Portable motors; the development of portable transformers.
(7) Farm refrigeration.
(8) Stationary spraying.

From the standpoint of the electrical industry and the California farmer, the investigations which are to be carried on by the Committee on the Relation of Electricity to Agriculture are of the greatest importance. While the opinion has been general that electric energy has found its greatest application to agriculture in this state, the exact status of this application has never been known definitely. There are many questions which will be answered during the course of the investigations. For instance, information will be secured which will determine whether the farmer is utilizing electricity efficiently and profitably at the present time. If facts show that other forms of power are more suitable for certain farm operations, this fact will be brought out. If new uses for electric energy can be developed, power company and farmer will benefit.

In addition, the investigations in this state will be of the greatest benefit to similar committees working in the Middle West, the South and the East, where rural electrification is yet in its infancy. The statement has been made by one high in authority in the electrical industry that California will be the major workshop in the national movement. However, if no other accomplishment comes from the work of the committee than to bring the farmers and the utilities to a closer mutual understanding, much will have been done for the betterment of the state.



Applications of electricity on the farm such as this, in which a 60-hp. motor drives a grain elevator and grinder, will be studied by the committee.

Commercial National Section Discusses Load Increase

By George W. Barker
Associate Editor, Journal of Electricity

A thorough analysis of the problems of load increase, merchandise sales and customer relations, by leading commercial department men of the electrical utilities of the United States and a consideration of new avenues of business, together with cooperation with other industries were the topics that engaged the attention at the Section's conclave meeting held at San Rafael, Calif., November 19-21, 1924.

LOAD increase was the major topic at the meeting of the Commercial National Section of the National Electric Light Association at the Hotel Rafael, San Rafael, Calif., Nov. 19-21, 1924, when approximately 200 members of the commercial branches of the electrical industry gathered for the purpose of discussing their particular problems. Increased sales only with increased service to the consumer were the keynote of the discussions. This applies equally well to the sale of electrical appliances and to the sale of energy. Throughout all of the individual committee meetings during the three-day session, the fact was apparent that this section is building on the sound basis of satisfied consumers and that sales volume is desired only when the attendant equipment will add to the more satisfactory use of electricity by the consumer. Frequent gratification was expressed or implied when ways and means had been found for more scientific application of energy to a consumer's needs, even though this application might result in somewhat decreased consumption from that of previous equipment for the specific purpose. The idea was often expressed that improved application eventually resulted in the use of energy for new purposes and that the policy of conscientious service is a force to be reckoned with in establishing public relations.

The meeting opened with a general conference on Nov. 19, with W. R. Putnam, vice-president and general manager of the Idaho Power Company, Boise, Idaho, and chairman of the Commercial National Section, in the chair. After a short general address of welcome, in which general plans for the meeting were outlined, Robert Sibley, executive manager of the California Alumni Association, gave an interesting talk on the World Power Conference held in London, England, during July, 1924. There were present at this conference about 3,000 conferees, and the affair was notable for the fact that, for the first time, the progress of the world in power development was presented and recorded in the English language. From the fact that representatives were on hand from every nation in the world, the interest of governments in power development was well indicated, Mr. Sibley stated. It seems apparent that the industrial activity of a community may be measured by the power output. This being the case, the United States stands well in the industrial foreground, for reports at the World Power Conference indicate that the production of electrical energy in this country exceeds by 20 per cent the combined production of the rest of the world.

Interest at the meeting of the lighting committee was centered in the matter of whether or not the electrical industry should attempt to capitalize commercially on the recent Better Home Lighting Contest. The discussion on this subject was extensive and animated, the chief feature being that the electrical industry had made a definite promise in good faith that the contest should not be touched by any commercial effort or atmosphere. The consensus of opinion was that the educational work that has been so thoroughly and painstakingly done during the contest should be followed up very definitely and fully with properly directed sales campaigns during the ensuing year. There was no argument, however, over the fact that future potential business should be developed in such a manner that educators could never consider that the pledge of the entire industry had in any way been violated. The fact was brought out that the cooperation of the educational interests has been such a vital factor in the success of the campaign that the industry is bound to exert unusual precautions in the formation of sales plans to refrain from reference to the contest.

H. M. Crawford, sales manager of the Pacific Gas and Electric Company, San Francisco, Calif., summarized the situation well when he said that a commercial follow-up is already planned and in execution and that the section should suggest ways and means of follow-up from an educational point of view. He suggested the formation of large groups within the industry for the purpose of speaking on better lighting before chosen audiences. The chairman of the committee, C. C. Munroe, of the Detroit Edison Company, Detroit, Mich., and others present felt that there should be some return from the investment and that this committee can help to improve the residence lighting of America.

The contest has cost the industry a large sum, but the fact that this investment is well advised is

verified by the already evidenced interest on the part of the public in the matter of illumination. This interest has expressed itself in inquiries, as well as sales, and the feeling in the industry is that this early impetus augurs well for a large-volume sales follow-up. This volume will not be confined to the immediate future, but will be spread over many years on account of the fact that the children who have participated will demand better lighting when they are older.

Interest Aroused in Better Lighting

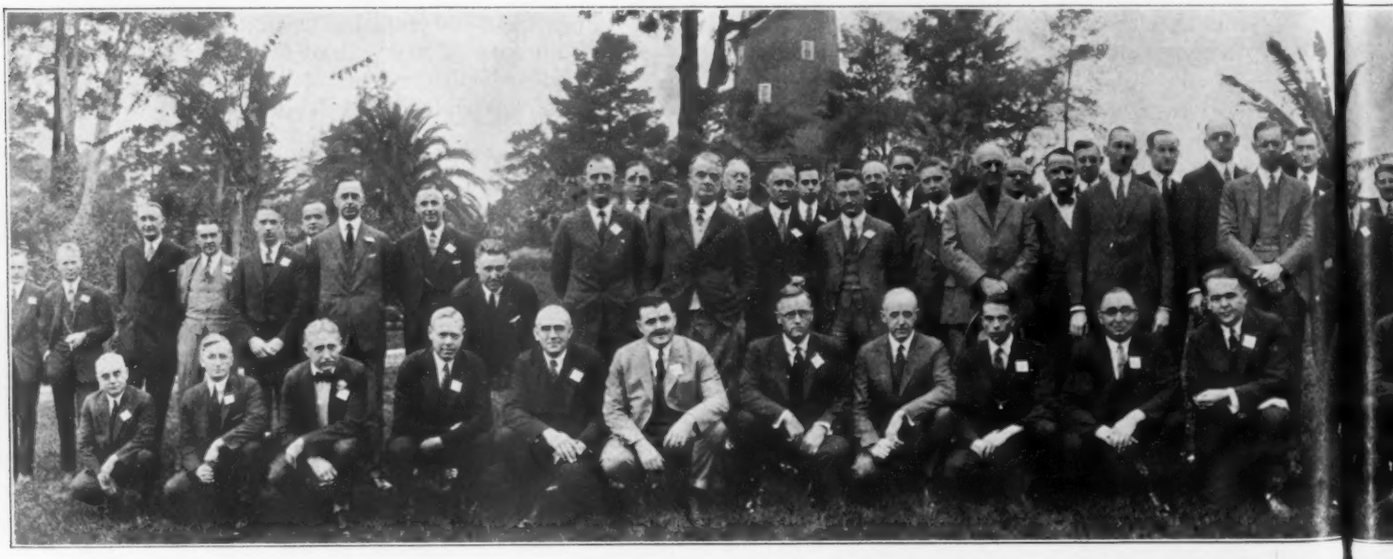
The valuable effect of the primers used in connection with the contest was stressed by practically all who spoke on the subject, and it was stated that many educators have expressed a desire to incorporate into their courses and into the curriculums of schools generally a comprehensive study of light and lighting. Libraries have become interested in the subject and in this way the matter of lighting will become of fundamental interest and the resultant effect upon sales volume of lighting equipment and of accompanying electrical supplies will be felt for a considerable time. A feature of the discussion not to be overlooked was the opinion voiced by one representative that public relations are directly affected by good lighting. A. Jackson Marshall, secretary of the National Electric Light Association, New York City, said that it had been found that consumers whose lighting equipment was of the proper type and efficiency were prone to pay higher bills with less complaint than those whose fixtures provided inadequate illumination and whose bills were often much lower.

The value of the better lighting movement may be expressed financially by the remarks of Mr. Putnam, who said that the use of only one additional kw-hr. of energy per month by every home in the country means an added revenue to central stations of more than $1,000,000. This huge return justifies properly directed commercial effort. The Better Lighting Contest is recognized as a powerful means toward accomplishing this additional load and, from reports by men from various geographic divisions, it was evidenced that the contest had been highly successful. As a natural result of the contest and as an educational benefit, it was felt that the National Electric Light Association should endeavor to institute courses in lighting in those schools of the country where the subject could best be handled. This would enable educators to guide students in the matter of lighting equipment just as they are now guided in art, music, domestic science and other essentials of daily life.

An interesting feature of the meeting of the lighting committee was a detailed description by P. M. Parry, commercial manager, Utah Power & Light Company, Salt Lake City, Utah, of the organization and functioning of a Lighting Service Bureau. This bureau was conceived to improve illumination conditions in stores, restaurants, etc., and has had a remarkable record of achievement. The personnel of the bureau includes all branches of the industry, who have served without compensation other than that from regular sources of employment and have acted in the capacity of illumination advisory engineers. No charge has been made to the consumer for this service, and a total of about 200 jobs has been installed. The bureau has recommended types of equipment only and has not specified individual manufacturer's goods. In this way an impartial service has been rendered, and the selection of lighting fixtures has been left a competitive matter. The cost of the bureau service for this work has been about 5 cents per dollar of annual revenue from installations supervised by the bureau. The results of the bureau's work have been so satisfactory to the consumer that the service is now in steady demand by architects and builders.

Discussion of Lighting Schools

A discussion of the lighting schools that are to be held by the association drew forth the general opinion that these schools should be held preferably at Harrison, N. J., Cleveland, Ohio, and Oakland, Calif. The time of holding the schools will be



A group of the delegates attending the recent meeting o[illegible]ation

worked out to meet the varying seasonal business conditions found in the different sections of the country.

It was the unanimous opinion of this committee that the lighting educational course conducted for the last few years should be continued, and a motion to this effect was passed. The suggestion was advanced that in order to take advantage of the Eastern talent that would be assembled in San Francisco during June, 1925, it would be desirable to hold an electric heating and transportation school just prior to the national convention to be held beginning June 15. The power bureau, at its meeting held later, passed a motion asking the executive committee of the commercial section to hold such an industrial school.

University Farm Lighting Exhibit

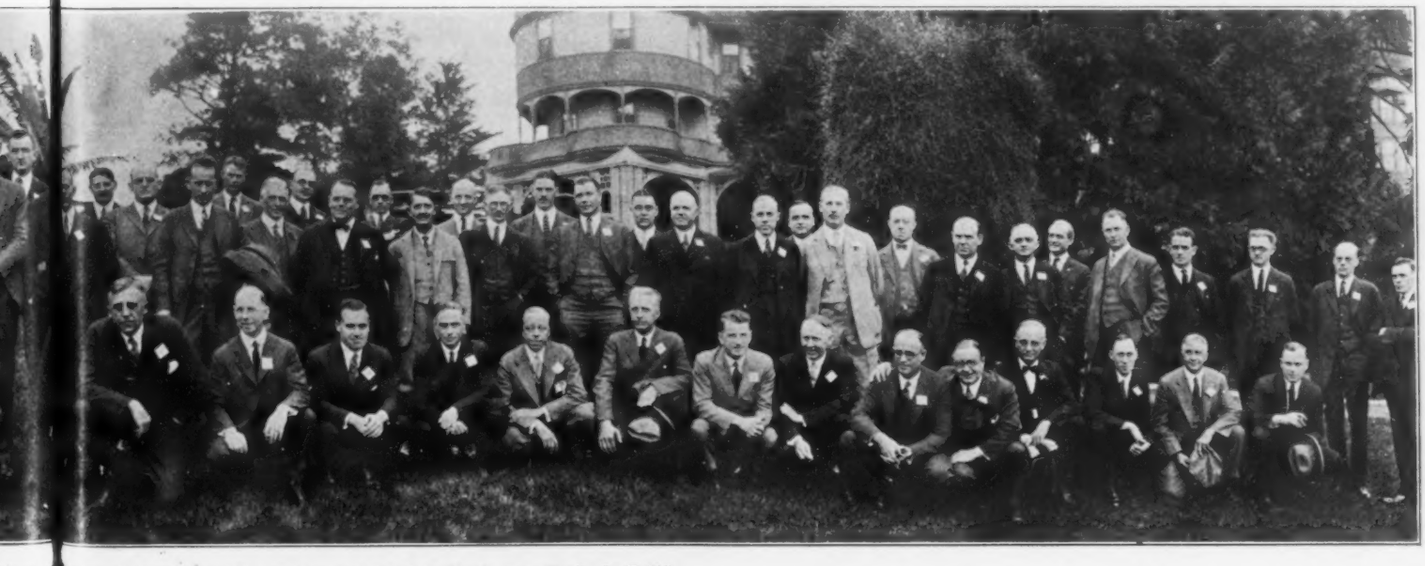
One of the most interesting things in connection with the meeting of the lighting committee was the exhibit of the University of California Agricultural Extension Division. This is a traveling demonstration of lighting and lighting effects and was conceived and executed by the staff at the University Farm, Davis, Calif. Under the direction of L. J. Fletcher, assistant professor of agricultural engineering, B. D. Moses and J. P. Fairbank have constructed a portable booth which is used for the purpose of showing the farmers the value of electricity for illumination and for demonstrating the various types of fixtures, together with their advantages and disadvantages. The outfit is packed in a box 8 ft. long and 3 ft. square and is transported from one farm center to another on a light truck. Previous arrangements having been made by the proper authorities—farm bureau agent or some other representative of farming interests—the exhibit is presented at a convenient place in the farming community. This service is conducted by the University as a part of its work in connection with the improvement in farm living conditions. In order to further the agricultural application of electricity and to determine to just what extent it may be so applied economically, the university has assigned B. D. Moses to an investigation. This will be the university's contribution to the work of the Committee on the Relation of Electricity to Agriculture. Funds for financing this work have been raised by voluntary contributions from the power companies.

Appliance Committee

The outstanding feature of the meeting of the appliance committee was the expression of opinion relative to central station merchandising. Those who expressed themselves generally indicated without question that a sound policy of central station merchandising is essential to bring about the desired volume of appliance business. It was also stated that, in those sections of the country where central stations have put such sound policies into effect, general electrical merchandising conditions without exception have been improved and dealers have benefited. The advertising and sales work done by the power company, the sale of reliable merchandise at full list price, with a proper charge for time payments and the maintenance of an adequate appliance service department, have tended to improve dealer effort and have increased sales volume for all in the appliance business. Appliance sales as high as $20 per lighting meter were reported, and the appliance sales departments were commonly reported as showing a profit although some companies find that their profit is in revenue.

Central Stations Merchandising Guides

An interesting demonstration of the value of central station merchandising effort was furnished by the statement that where the power company had dressed its windows only a week before Christmas the dealers had done the same, but when the company changed its display two weeks before the holiday the dealers followed suit. It was thus shown that dealers looked to the central station for guidance in merchandising matters. Following this line of thought, the central station stands in the position of having to accept the definite responsibility for merchandising conditions in its territory.



...ational Commercial Section at Hotel Rafael, San Rafael, Calif.

PRINT IN BINDING

It was felt that sales promotion, instead of becoming cheaper, will undoubtedly cost more. However, it was also the opinion that it will be worth more to the dealer and to the central station, as each appliance sold reduces the barrier for future electric appliance profits.

An important phase of sales by central stations is the matter of public relations. Many power companies feel that their best public relations employee is the salesman and that he offers the closest point of contact between the company and the consumer. Some companies have established service-sales departments, the members of which are equipped to make minor repairs on electric appliances and who also follow up this gratuitous service with appliance sales effort immediately after completing the repair job. The impression on the consumer made by the free repair service creates a friendly relation and also frequently makes possible the sale of additional appliances and, not infrequently, company securities. The opinion was often expressed that, where it had not already happened, the public relations department of utilities would eventually be consolidated with or absorbed by the sales department.

Appliance Committee to Compile Sales Data

While no concrete sales plans were presented at this meeting, the appliance committee this year will devote its efforts to producing and assembling sales data. Specific information on definite sales campaigns and selling methods will be sought, and the details of these campaigns will be studied to determine their general application. An interesting feature of this meeting was the outlining by members of the Pacific Coast Electrical Association of the program for the year. This program includes an appliance sales plan covering twelve months and embraces sales plans for electric appliances—by dealers and central stations. It also includes a plan for dealers in motor-driven appliances.

George H. Jones, Chicago, Ill., gave some interesting information relative to the installation of electric cooking equipment in hotels and restaurants and stated that his company had found no difficulty in making sales of this type of equipment either from the point of view of first cost or of operating expense. The improved product, facility of operation, elimination of smoke, removal of fire hazard and pleasanter working conditions for kitchen employees have proved factors in connection with this sales effort and have resulted in the entire kitchens of some of the largest hotels and clubs being completely electrified. One restaurant proprietor is so well pleased with the electric kitchen equipment in his cafes that he intends to add electric heating of the premises themselves in the next place he opens.

Attitude of Coffee Roasters' Association

One feature of interest that must command the attention of the electrical industry is the attitude of the Coffee Roasters' Association. This organization is apparently opposed to the use of electric percolators and committees representing the electrical and coffee interests are endeavoring to work out a happy solution. This opens up the advisability and the possibility of seeking the assistance of related industries in the promotion of appliance sales. For example, many baking concerns have assisted in the sale of electric toasters, and it is thought that there may be other similar cooperative possibilities.

Power Committee

The major discussion of the power committee centered around the matter of purchased versus generated power. The interest in this phase of operation was evidenced by the number of participants in the session and by the variety of ideas expressed. H. E. Sandoval, manager of electric sales, Pacific Gas and Electric Company, San Francisco, Calif., stated that the Pacific Coast Electrical Association was considering in its power committee the following problems: The utilization of waste heat in (a) cement plants, (b) sawmills, (c) laundries, (d) hotels, and the matter of competition from the Diesel engines. The discussion regarding waste heat in cement plants was particularly lively and it was the sense of the meeting that many cement plants can be induced to purchase energy, at least in part. Common experience has been that those plants that are producing energy from waste heat have seldom been able to produce sufficient to care for their needs and that they have been obliged to purchase additional service from the utility.

The commercial bake oven load was the subject of protracted discussion at the evening meeting held by the power committee and considerable interesting information was presented. P. M. Parry, of the Utah Power & Light Company, Salt Lake City, Utah, told of the commercial bake oven load in his territory and stated that practically all commercial ovens were electrically operated. He stated further that every oven so heated has proved entirely satisfactory. This load has generally been found by members to be of profitable character and there are numerous instances where large commercial baking companies have changed over from fuel to electricity. The committee was interested in the combined light and power rate for this service as applied in Chicago and information on this service was furnished by George H. Jones.

A motion was passed by the power committee asking the approval of the executive committee for holding an electric heating school in San Francisco the week before the annual convention in June, 1925.

Electric Cooking and Heating Committee

The electric range survey, now under way in the Pacific Northwest, commanded the interest of all in attendance at the meeting of the Electric Cooking and Heating Committee. Lewis A. Lewis, sales manager of the Washington Water Power Company, Spokane, Wash., reported in detail the progress of the survey and showed what it was hoped to accomplish with the assembling of the data accruing from the study. The report will be considered both from a commercial and an engineering standpoint, and the committee expects to make definite recommendations as to the value of this type of load at the national

convention in June, 1926. Investigations and tests will cover three seasons of the year—winter, spring and summer—and the tests will be conducted in typical districts of the cities of Spokane, Wash., and Boise, Idaho. A report on the winter set-up will be made at the June, 1925, convention to be held in San Francisco. The survey is being made under the direction of H. L. Melvin, electrical engineer, Washington Water Power Company, Spokane, Wash.; F. J. Rankin, chief engineer, Idaho Power Company, Boise, Idaho, and M. T. Crawford, superintendent of distribution, Puget Sound Power & Light Company, Seattle, Wash. The data to be obtained are as follows:

1. A. Data regarding average demand of range.
   B. Data regarding annual kilowatt-hour consumption per range.
2. Data regarding average demand in relation to average connected load per range.
3. Data showing diversity of range demand.
   (a) Charts giving load characteristics of a large group of ranges, 10, 25, 50 to 150.
   (b) Charts giving characteristics of lighting and range load in apartment houses, etc.
   (c) Diversity between range peak and system peak.
4. Transformer capacity required for ranges.
5. Figures showing investment costs of central stations required to provide service to ranges under various conditions.
   (a) Figures showing downward tendency of investment cost as group of ranges increases.
6. Demand of range on distribution system, substation and power plant.
   (a) Effect of demand of group of ranges on substation and power plant.
   (b) Time of annual peak with different load characteristics, i. e., before group of ranges installed and after.
7. Data regarding average wiring cost to customers.
8. Average life of ranges.
   (a) Maintenance cost of range.
9. Effect of range load on regulation.
10. Distribution and investment costs.
    Distribution, operation and maintenance.
    Customer costs.
11. Figures showing effect of load factor on kilowatt-hour cost to central station.
12. Water heaters.
    (a) Data regarding type and size of water heater installed.
    Demand and average kilowatt-hour consumption of water heaters.
    (b) Load characteristics where range and water heater are on double-throw switch and also where range and water heaters are used at the same time.
    (c) Data regarding additional cost of installation to alternate range and water heater.

It is expected that unusually interesting and valuable engineering and commercial data will accrue from the study as the density of range penetration reaches, in some of the districts to be surveyed, as high as 50 per cent of the consumers. It is hoped that from the results obtained curves may be derived that may be superimposed on the system curves of any company to give a picture of the range load.

Metered Water Heating Committee Report

The report of the Pacific Coast Electrical Association Committee on Metered Water Heating presented interesting figures which showed that there are approximately 10,000 electric water heaters in that territory alone. Of these heaters, most of which are of the circulation type and 95 per cent of which are metered, approximately two-thirds are equipped with thermostats and the majority are used in combination with an electric range and on a double-throw switch. This is an advantageous arrangement as it reduces the monthly minimum, and it is felt that the range takes up the first block of the rate, thus making the rate for water heating sufficiently low to be attractive to consumers. The energy consumption for water heating varies from 250 kw-hr. to 850 kw-hr. per month. Where insulation is used on the water tanks the consumption is materially reduced, and some companies require that all tanks be covered. The common insulating practice embodies the use of either 1-in. or 2-in. material, but some consumers have used 3-in. covers. The radiation losses are much less with well insulated tanks than with tanks left bare or poorly covered.

Cost Figures Given

It was the sense of the meeting that smaller heaters probably produced a higher load factor, but that consumption is greater with a large heater. The size of the heater in common use varies in different communities from 1-kw. to 5-kw. capacity. This variation has been occasioned in some instances by rate conditions and the smaller heater has been fostered by the flat rate. It was shown that energy sold on a flat rate for water heating often brought in a revenue of six-tenths of a cent or less. The flat rate is looked upon as being detrimental to central station interests, and effort is being made toward a rate revision where flat rates now exist.

Electric cooking and water heating are being done in the Pacific Coast states with rates as high as 3½ cents per kw-hr. The cost of electrically heated water at 2 cents per kw-hr. is about the same as for gas-heated water with gas at $1 per M cu.ft. and of 550 B.t.u. content. Continuous hot water heaters connected to a storage tank appear to work fairly constantly between 10 p.m. and 3 a.m., with variations in the period of floating on the line during other hours. The cost for continuous hot water service seems to be about double that of intermittent service, and a 5-kw. heater is found to be about equivalent to the average circulating type gas water heater. One company, however, has 1,000 electric water heaters on its lines, all of 1 kw. each and working at a rate of 1 cent per kw-hr., with a monthly minimum of $2. In the case of many consumers in the Northwest, where furnaces are used, it is common practice to pipe the tank to the furnace as well as to the water heater and thus to save on energy consumption. There seems no doubt but that a rate of 1.5 cents per kw-hr. would stimulate the water-heating business and might have far-reaching consequences.

To Record Range Service Costs

It is now the intention of some twenty companies in the Great Lakes district to keep their service cost records on electric ranges in uniform fashion in order to be able to give proper comparisons and to furnish accurate service cost data. A subcommittee, under the chairmanship of C. E.

Greenwood, of the Edison Electric Illuminating Company, Boston, Mass., is working on the revision of wiring standards as they affect the installation of electric ranges and water heaters. The report, read by A. L. Smith, showed the need for everyone interested to get behind any movement to change wiring specifications for this class of equipment. The report also contained specifications for a new range plug switch, the use of which it is expected will assist in reducing installation costs.

Customer Relations Committee

Realizing that the employee is the utility's real point of contact with the consumer, the Customer Relations Committee devoted much of its time and discussion to improvement of employees' status. This is regarded as a vital factor in future development of public service companies and many ideas were advanced. One of the most important suggestions came from members of the Pacific Coast Electrical Association and had reference to an employees' manual that is now under preparation. This manual will be in such form that it may be applied to any company's system and will give general data necessary for the more intelligent handling of the public by employees. It is hoped by this means so to improve the employees' understanding of the consumers' and the company's problems that better customer relations will be established on a basis of mutual understanding.

The Courteous Service Club was described in detail by R. A. Balzari, manager, industrial department of the Westinghouse Electric & Manufacturing Company, San Francisco, Calif., and the idea will be presented to the association with the view of further supporting the movement.

Electric Domestic Refrigeration Committee

The high first cost of domestic electric refrigeration devices and the fact that such apparatus is not yet perfect in detail were the topics of major interest at the meeting of this commmittee. The fact that electric domestic refrigeration offers big sales possibilities but that many central stations feel that policy matters intervene was also brought out. Second in interest were the facts that this type of apparatus has not yet been perfected so that service troubles have been entirely eliminated, and the need for adequate service organization or provision for taking care of this important feature of the sale. There are now several makes of electric refrigerator on the market and more in development and it is felt that the past troubles are rapidly being overcome. At the present time it seems to be the policy of those central stations that are selling refrigeration equipment to also take care of the service. In some cases this service is rendered gratuitously and in others it is the practice to charge a small fee. Some companies are endeavoring to work out a flat rate per year for this maintenance service and it has been found that in many cases the maintenance costs are so low as to be astounding. One member stated that his experience showed that service costs had been less than on the first equivalent number of electric irons. Another member claimed that his service charges on electric refrigeration equipment were less than on the same number of electric washers.

The quality of electric refrigeration is superior to that of ice and the cost at a rate of 9c per kw-hr. is claimed to be about the same as ice. Enough machines have been sold to prove, in spite ofthe present minor service difficulties, the perfect consumer satisfaction. One company expects to have 1,000 additional machines on its lines within the next year and anticipates no troubles of serious moment, basing its idea on past experience.

Various plans have been followed for the promotion of this class of business and one central station has tried successfully the plan of selling on thirty or sixty days approval, taking the machine back if the consumer was not satisfied at the end of the trial period. It was the general opinion that the best sales method was based on practical demonstration and that this business offers pleasing possibilities to aggressive dealers and central stations.

Transportation Committee

One of the outstanding features of the meeting of the Transportation Committee was the fact that many national trade organizations have conducted investigations that have resulted in their approval of the electric truck as applied to their particular businesses and have commented favorably on its application. This, together with the fact that electric truck battery charging offers an attractive central station load, with opportunity to fill up night valleys, thus making more effective the work of existing investment, provides an inducement to power companies to foster the electric truck business. While it is true that the demands of war interfered with the development of electric truck business, war conditions have now been overcome and the battery and vehicle manufacturers have the inclination to proceed as rapidly as the market warrants.

It was generally felt that there is a tendency to sell the technicalities of truck construction rather than transportation and it was evidenced that central stations must be the guides in truck sales. Not only must they apply electric trucks to their own transportation problems wherever possible but they must also assist in the promotion of truck sales by others. One power company has seven electric trucks and is making an intensive study of the relative costs as compared with gasoline vehicles. The Pacific Gas and Electric Company, San Francisco, Calif., has established an electric transportation bureau for assisting in the sale of electric trucks but the company does not sell any equipment. The bureau furnishes information and refers the prospect to the various representatives of truck manufacturers.

A motion was passed by this committee and referred to the executive committe urging that the Pacific Coast Electrical Association cooperate with the National Electric Light Association to hold a transportation school in San Francisco, Calif., the week before the National Convention in June, 1925. The members of this committee created some interest and introduced a novel feature by making the trip from San Francisco to San Rafael in an electric truck,

timing their arrival to coincide with the time of the committee meeting.

General Conference

The general conference was held under the direction of A. M. Frost, manager, commercial department, San Joaquin Light & Power Corporation, Fresno, Calif., and chairman of the executive committee of the Pacific Coast Electrical Association. Mr. Frost's address was very brief and was followed by a short talk by Frank A. Leach, Jr., vice-president and general manager of the Pacific Gas and Electric Company, San Francisco, Calif., and president of the Pacific Coast Electrical Association. Dr. E. A. White, chairman of the National Committee on the Relation of Electricity to Agriculture then spoke at length on the work of the committee. Dr. White said that electric service on the farm is an obligation on the farmer and the public service company alike. He also stated that agriculture could not longer be pampered as it had been in some respects in the past. The aims of the committee are to determine the maximum possible economic uses of electricity on the farm and not to recommend electricity as a panacea for all farm ills. The electric motor on the farm is, in effect, in competition with all other forms of prime mover and in the last analysis the source of energy best adapted as a prime mover will come out on top, in Dr. White's opinion. In his opinion, too, the chief requisites for selling the farmer are, first, to inspire his confidence; second, to deal with him honestly, and, third, to give him the information he needs for the consideration of his specifis problems. Particularly the farmer needs to know the cost of electricity as applied to his operations. State organizations are being formed for the study of electricity on the farm and Dr. White believes that the achievements of these committees are to be credited largely to the electrical fraternity. So far the most comprehensive plan for conducting these investigations has been formed in California.

L. J. Fletcher, assistant professor of agricultural engineering of the University of California, Davis, Calif., and chairman of the California Committee on the Relation of Electricity to Agriculture, spoke at length on the work as it has progressed in that state, a report of which appears on another page of this issue.

Fred R. Jenkins, of the Commonwealth Edison Company, Chicago, Ill., and chairman of the Committee on Education, described at some length the work of the committee and the detail of the courses. He also made a plea for greater support from member companies as to employee participation. Some companies already have a plan whereby they pay one-half of the cost of the course; others advance the cost and allow the employee to repay the company in small monthly installments. Mr. Jenkins felt that all companies should makes some special arrangements to permit of the fullest benefit from all of the courses as they have been prepared by experts only after the most careful consideration.

The executive committee met at lunch on Friday, Nov. 21. The session lasted for several hours and the work of the various committees was discussed at length, each committee chairman giving a review report of the activities of his committee. The next conclave meeting of the Commercial National Section was set for March 17-19, 1925, at New York City.

Banquet

The conclave closed with a banquet held at the Hotel Rafael, Friday evening, Nov. 21. C. T. Hutchinson, Journal of Electricity, officiated as toastmaster and Joseph Thompson, president of the Pacific Electric Manufacturing Company, San Francisco, Calif., was the speaker of the evening. In the afternoon, prior to the banquet, many of the members made a trip to the top of Mt. Tamalpais, remaining there until after dark in order to watch the turning on of the lights in the Bay district. Special attention had been paid to the entertainment of members and guests and several unusual features were provided. The meeting was voted one of the best in the history of the Commercial National Section.

Crossed Coil Radio Beacon to Guide San Francisco Bay Ferry Boats

THE crossed coil radio beacon developed at the Bureau of Standards has been suggested as a means of guiding ferry boats across San Francisco Bay in foggy weather, and the bureau believes it will prove very useful for that purpose. This type of beacon marks out a line in the ether, and a boat equipped with an ordinary receiving set can tell whether or not she is on that line, and to which side she is off.

The San Francisco ferry boats traverse a distance of 3½ mi. and carry a very large proportion of the city's commuting population as well as all through passengers from the east and north. At times the fog is so thick that one end of the boat can scarcely be seen from the other, and strong tidal currents are encountered. During clear weather the boats make the trip from slip to slip in approximately 15 min., but during foggy weather, when the speed of the vessels is cut down to lessen the hazard of the voyage, even if no delays are encountered, the trip may take as long as 30 min. Frequently when the fog is at its worst it is necessary for the vessels to stop completely to permit other ferries, off their course, to pass. At present nautical compasses are used in guiding the vessels across the bay, and in many cases ferries will be off their course for the greater part of the trip.

The crossed coil beacon consists of two coil antennas crossing each other at an angle of 135 deg. A coil antenna gives its loudest signal in the plane of the coil and its weakest signal in a line perpendicular to that plane. On a line bisecting the 135 deg. angle the signals from the two coils would be of equal intensity, while if the receiving set is moved to either side the signal from one coil becomes louder than the other. The coils are connected alternately to the sending set, and one of the two signal letters is sent over each coil. The operation is automatic, the letters alternating rapidly.

The COAST Outlet
ELECTRICAL CONSTRUCTIONISTS' and DEALERS' NEWS

A Practical System of Accounting for Contractor and Dealer

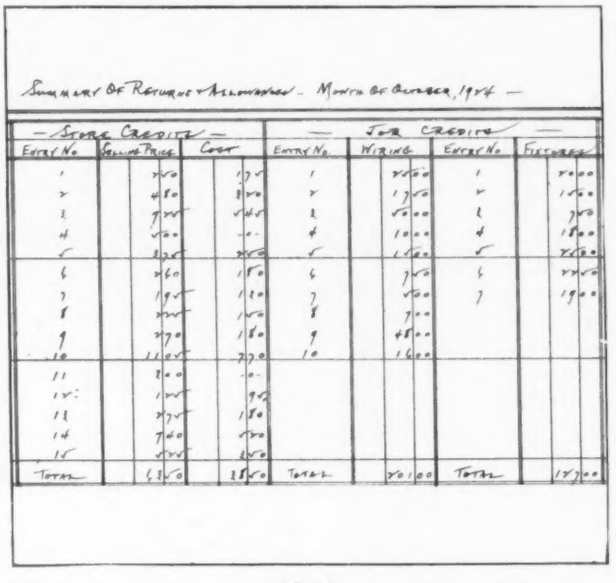
By F. V. Mitchell

THE Sales Summary, as illustrated in Fig. 1, contains a list of the store charges and job charges for the month to compile the total figures for the monthly closing Journal entries.

The office copies of all store charges are numbered serially, beginning with No. 1 each month, and are entered daily on this record before posting to the customers' accounts. The total selling price and cost of each charge are entered at the same time, the latter being for the compilation of the total Cost of Store Charge Sales for the month. The charges are then posted to the debit of the individual customers' accounts direct from the office copies, using the entry numbers marked thereon as posting reference, after which they are filed in numerical order, each month separately. In the monthly closing Journal entries the total of the selling price column will be debited to Accounts Receivable Controlling Account No. 3 and credited to Sales Account No. 50 (3-Store), and the total of the cost column will be debited to Cost of Goods Sold-Material-Account No. 52A (3-Store) and credited to Merchandise Account No. 10 (3-Store).

The office copies of all job charges are numbered serially, beginning with No. 1 each month for wiring and fixtures separately, and are entered daily on this record before posting to the customers' accounts. As will be noted, the total selling prices only are entered, the cost of the jobs when finished being ascertained from the Job Cost Sheets and Work in Process Summary. The selling prices are entered at the time that contracts are taken, or if time and material work, when they are billed. The charges are then posted to the debit of the individual customers' accounts direct from the office copies.

In the Aug. 15, 1924, issue of the Journal of Electricity, pages 136-7, a complete explanation was presented of the method of noting the condition of these contracts on the individual customers' accounts for collection purposes. After the end of the month in which they are posted, any contract upon which no "N.F." (not finished) notation appears is finished and the bill should be sent to the customer, showing credit for progress payments, if any. In the monthly closing Journal entries, the total of the job charges appearing in the Sales Summary will be debited to Accounts Receivable Controlling Account



Summary of Returns + Allowances - Month of October, 1924

— Store Credits —			— Job Credits —			
Entry No.	Selling Price	Cost	Entry No.	Wiring	Entry No.	Fixtures
1	7 50	1 75	1	12 50	1	10 00
2	4 50	3 00	2	17 50	2	15 00
3	7 75	4 45	3	50 00	3	7 50
4	7 00	--	4	10 00	4	12 00
5	2 25	2 50	5	15 00	5	22 50
6	4 60	1 50	6	7 50	6	22 50
7	1 95	1 20	7	4 00	7	19 00
8	2 75	1 50	8	7 00		
9	2 70	1 80	9	45 00		
10	11 25	7 70	10	16 00		
11	2 00	--				
12	1 75	95				
13	2 75	1 80				
14	7 00	4 50				
15	3 75	2 50				
Total	63 50	38 50	Total	201 00	Total	117 00

Fig. 2.

No. 3 and credited to Unfinished Contracts Account No. 16 (1—Wiring, and 2—Fixtures, respectively).

The Summary of Returns and Allowances, as illustrated in Fig. 2, contains a list of the store credits and job credits for the month to compile the total figures for the monthly closing Journal entries.

The office copies of all store credits are numbered serially, beginning with No. 1 each month, and are entered daily on this record before posting to the customers' accounts. The total selling price and cost of each return are entered at the same time, and on allowances entries are made in the selling price column only. The credits are then posted to the credit of the individual customers' accounts direct from the office copies, using the entry numbers marked thereon as posting reference, after which they are filed in numerical order. Each month's credits are

filed separately. In the monthly closing Journal entries the total of the selling price column will be debited to Returns and Allowances Account No. 51 (3-Store) and credited to Accounts Receivable Controlling Account No. 3, and the total of the last column will be debited to Merchandise Account No. 10 (3-Store) and credited to Cost of Goods Sold—Material—Account No. 52A (3-Store).

The office copies of all job credits are numbered serially, beginning with No. 1 each month, for wiring and fixtures separately, and are entered daily on this record before posting to the customers' accounts. As most of these credits are the results of allowances made after the work is completed, and since they are in effect a reduction of original selling price, no cost column is necessary. The credits are then posted to the credit of the individual customers' accounts direct from the office copies, using the entry numbers and job numbers marked thereon as posting reference, after which they are filed in numerical order according to the entry numbers, each month being filed separately. In the monthly closing Journal entries the total of the job credits appearing in the Summary of Returns and Allowances will be debited to Returns and Allowances Account No. 51 (1—Wiring, and 2—Fixtures, respectively) and credited to Accounts Receivable Controlling Account No. 3.

SALES SUMMARY — MONTH OF OCTOBER, 1924

— STORE CHARGES —						— JOB CHARGES —			
ENTRY NO.	SELLING PRICE	COST	ENTRY NO.	SELLING PRICE	COST	ENTRY NO.	WIRING	ENTRY NO.	FIXTURES
1	7 44 ✓	4 9 ✓	Forwarded	641 30	454 85 ✓	1	✓✓ 4 00	1	1✓7 00
2	✓ 6 0	2 9 0	26	1✓ ✓0	9 40	2	1✓7 ✓0	2	74 ✓0
3	6✓ 00	4✓ ✓0	27	7 ✓✓	✓ 40	3	78 00	3	✓1 ✓00
4	✓7 ✓0	18 2 ✓	28	1 ✓0	1 10	4	✓1✓ 00	4	✓2 00
✓	48 ✓	2 60	29	2 2✓	1 2✓	✓	146 ✓0	✓	10✓ 00
6	1✓ 20	8 60	TOTAL	684 90	47 ✓✓0	6	83 00	6	6 ✓✓0
7	8 7✓	✓ 8✓				7	1✓✓ 7 00	7	96 00
8	6 ✓✓0	4 2 7✓				8	94 ✓0	8	11 ✓✓0
9	9 ✓✓	6 9 0				9	13 ✓00	9	8✓ 00
10	14 00	9 80				10	11 ✓00	10	✓✓4 00
11	✓ ✓0	1 7✓				11	✓0 4 00	11	68 00
12	✓✓ 00	17 ✓0				12	1 ✓2 00	12	11 4 00
13	6 7✓	4 ✓0				13	6 ✓00	13	14 ✓00
14	1✓0 00	100 00				14	✓1 7 00	14	7 8✓0
15	11 ✓✓	7 8✓				15	19 4 00	15	1✓4 00
16	✓✓ ✓0	1✓0 00				16	✓1 0 00	16	10✓ 00
17	1 4✓	1 10				17	4✓ 6 00	17	9 7 00
18	10 1✓	7 60				18	7✓ ✓0	18	6 4 00
19	7 60	✓2 0				19	✓ 4 00	19	✓ 1 00
20	4 8✓	3 ✓✓				20	14 7 00	20	20 6 00
21	4 ✓✓0	✓9 7✓				21	✓0 6 00	21	108 00
22	✓✓✓	2 6✓				22	9 3 00	22	7 6 00
23	2 90	✓ 60				23	17 ✓00	23	6✓ 00
24	✓7 ✓0	19 ✓✓				24	21 8 00	24	✓✓ 00
25	2 7✓	✓ 60				25	8 7✓0	25	✓ 0 00
26	1 ✓✓	8✓				26	11 9 00	TOTAL	2✓ 4 7 00
27	24 10	23 90				27	9 ✓✓3		
28	60 00	40 00				28	14 8 00		
29	✓7 ✓	1 8✓				29	1✓9 00		
30	4 1✓	2 90				30	7✓ 00		
31	1 90	1 2✓				TOTAL	✓98 4 00		
32	2 ✓✓	✓ 20							
33	✓ 40	40✓							
34	✓✓✓	1 70							
35	4 10	30✓							
Forwarded	641 30	454 85 ✓							

Fig. 1.

Electrical Construction

By E. Earl Browne

THE character of conduit jobs is such that unit prices per outlet or circuit, due to varying installation conditions, are not sufficiently accurate to merit the consideration given to these unit prices on knob and bushing jobs. One of the reasons for this is the fact that in most cities conduit construction to date has been used very little in the single-family or flat buildings. Another factor is the fact that since the class of construction of walls, floors, ceilings and partitions vitally affects the amount of material entering into an outlet or circuit, in an apartmement, store, loft, office, hotel, industrial or commercial building, it is absolutely necessary to make a study of the cheapest and best methods of making the electrical installation.

This applies particularly to the so-called "roughing-in" of conduit, outlets, and panel boxes. The variations that may occur in the length of circuit runs from outlet to outlet may be as much as 50 per cent, due to the requirements on the part of the architect or engineer that in the case of a wood joist job there be no cutting of the joists at more than a specified distance from a wall or bearing partition. Such a requirement signifies that where runs are made at right angles to the joists it is necessary to break in and out from the outlet the specified distance from the wall or partition. This means that if two outlets are 15 ft. apart and the distance from the wall or partition to the outlet in each case is 5 ft. and the specifications call for a maximum of 1 ft. for the cutting of the notch in the joists, the run from outlet to outlet will be $15 + (5 - 1) + (5 - 1) = 23$ ft.

In the case of reinforced concrete construction many engineers will not allow any pipe larger than ¾in. to be put in the slab. When it is considered that the 1920 Code allows six No. 14 wires in a ¾-in. conduit that is not over 30 ft. long, and the 1923 Code allows a maximum of seven No. 14 wires in a ¾-in. conduit for any length, the stipulation that pipe larger than ¾ in. may not be laid in the concrete means that it is not permissible to install a multiple run of four circuits in one conduit. The stipulation also requires that all 1-in., 1¼-in. and larger sub-feeder conduits must be run exposed and therefore at right angles to the outside walls instead of a straight line as would be the case if they were permitted to be run in the concrete.

Some wood joist jobs have a ⅞-in. strip between rough floor boards and finished floor; others have a ⅞-in. strip between joists and ceiling. In both these cases a ½-in. conduit would be the maximum size conduit permissible which means that but two circuits of No. 14 wire can be run in that conduit. In the case of exposed work there are also many conditions, either structural or imposed by the specifications, that make it impossible to arrive at any proper unit of cost per outlet or circuit; for instance, the breaking around all beams with "L" type of condulets or other fittings is often required in lieu of an offset in the conduit. It is therefore necessary in an all-metal installation to measure all material, and from the list so compiled apply experience and best judgment as to the amount of labor which will be required to install this material, keeping always in mind any unusual conditions of construction, delay, traveling time, etc., and applying these either as separate items in addition to the regular cost or as additions to the regular unit cost.

To use a definite example, assume that the men receive $8.00 for an eight-hour day and require the payment of traveling time outside of certain geographical limits and that this time amounts to 1½ hours per day per man. The unit cost per hour will be worked out as follows:

Two men at $8 per day	$16
Automobile, 30 miles, at 10c. per mile	$3
Total	$19

$19 ÷ 13 (number of man hours) $1.46 per hr. per man

The above assumes that the work can be handled better by two men; if one man can do the job the cost per hour would be:

$8 + $3 = $11 ÷ 6½ (number of man hours) = $1.70 per hr.

The logical subdivisions of the costs of direct labor units are as follows:

Locating and setting ceiling outlets
Locating and setting bracket outlets
Locating and setting switch outlets
Locating and setting convenience outlets
Locating and setting floor outlets
Locating and setting signal outlets
Locating and setting cabinets
Cutting, threading, fitting and fastening of conduit
Installing, fitting and fastening of elbows, bends, etc.
Fishing, pulling, splicing of circuit wires
Fishing, measuring, cutting and pulling of feeder, sub-feeder and service wires
Installing and connecting of single pole switches
Installing and connecting of three-way switches
Installing and connecting of four way switches
Installing and connecting of convenience outlets
Installing and connecting of floor outlets
Installing of cabinet doors and trims or door and gutter linings
Installing and connecting of panel boards.
Installing and connecting of signal apparatus
Installing and connecting of service, metering, feeder and sub-feeder switches.
Installing and connecting of all fixtures
Connecting of motors
Installing and connecting of starters.

A convenient arrangement of cost data could be made about as shown in Fig. 1 with such modifications as best suit the individual or class of work usually performed.

From even a casual glance at the number of items making up a conduit job any one can see that the more closely an estimate is detailed the greater the accuracy of the finished figure. The contractor can see also how impossible it is to formulate, with any degree of safety to the contractor and justice to the owner, a unit price as is being done by some of the "guestimators" in the business.

		FLOORS AND CEILINGS								PARTITIONS AND WALLS					COLUMNS		
		RE-INFORCED CONCRETE	STEEL PAN CONST-RUCTION	WOOD JOISTS NOTCHED	WOOD JOISTS 7/8" STRIP OVER ROUGH FLOOR	WOOD JOISTS 7/8" STRIP BETWEEN JOIST AND CEILING	FURRED	EXPOSED ON WOOD	EXPOSED ON CONCRETE	WOOD STUDS	TILE	BRICK	CONCRETE	2 SOLID	STEEL	CONCRETE	WOOD
CEILING OUTLETS																	
BRACKET OUTLETS																	
SWITCH OUTLETS																	
CONVENIENCE OUTLETS																	
FLOOR OUTLETS																	
SIGNAL OUTLETS																	
1/2 inch	LIGHT AND SIGNAL CIRCUIT CONDUITS																
3/4 inch																	
1 inch																	
1/2 inch	FEEDER, SUB-FEEDER AND MOTOR CIRCUIT CONDUITS																
3/4 inch																	
1 inch																	
1 1/4 inch																	
1 1/2 inch																	
2 inch																	
2 1/2 inch																	
3 inch																	
3 1/2 inch																	
4 inch																	
1 inch	ELBOWS																
1 1/4 inch																	
1 1/2 inch																	
2 inch																	
2 1/2 inch																	
3 inch																	
3 1/2 inch																	
4 inch																	
No 14	CIRCUIT WIRE																
No 12																	
No 10																	
No 12	FEEDER, SUB FEEDER AND SERVICE WIRES																
No 10																	
No 8																	
No 6																	
No 4																	
No 3																	
No 2																	
No 1																	
No 0																	
No 00																	
No 000																	
No 0000																	
250,000																	
300,000																	
350,000																	
400,000																	
450,000																	
500,000																	
600,000																	
750,000																	
1,000,000																	
SINGLE POLE SERVICE																	
3 WIRE SERVICE																	
4 WIRE SERVICE																	
CONVENIENCE OUTLETS																	
FLOOR OUTLETS																	
2 TO 8	CIRCUITS, CABINETS AND TRIMS.																
10 TO 20																	
22 TO 36																	
38 AND OVER																	
30 AMPERES	LIGHT AND POWER PANEL TERMINALS																
60 "																	
100 "																	
200 "																	
400 "																	
30 "	2 POLE-SAFETY SERVICES																
60 "																	
100 "																	
200 "																	
400 "																	
600 "																	
30 "	3 POLE SAFETY SERVICES																
60 "																	
100 "																	
200 "																	
400 "																	
600 "																	
800 "																	
UP TO 5 H.P.	A.C. MOTOR STARTERS CONNECTION																
7 1/2 TO 25																	
UP TO 5 H.P.																	
7 1/2 AND 10																	
15 TO 25																	

Fig. 1.

Treatment for Electrical Shock*

AN accidental electrical shock usually does not kill at once, but may only stun the victim and for a while stop the breathing. The shock is not likely to be immediately fatal, because:

(a) The conductors may make only a brief and imperfect contact with the body.

(b) The skin, unless it is damp with perspiration or wet, offers some resistance to the current.

The life of the victim depends upon the prompt and continued use of artificial respiration. The reasons for this are:

(a) The body continuously depends on an exchange of air, as shown by the fact that we must breathe in and out about fifteen times a minute.

(b) If the body is not thus repeatedly supplied with air, suffocation occurs.

(c) Persons whose breathing has been stopped by electrical shock have been reported restored after artificial respiration has been continued for approximately four hours, and the treatment should be continuously applied until rigor mortis (stiffening of the body due to death) sets in.

The Schafer, or "prone pressure" method of artificial respiration, slightly modified, is illustrated and described in the following resuscitation rules.

Aid can be rendered best by one who has studied the rules and has learned them by practice on a volunteer subject.

INSTRUCTIONS FOR RESUSCITATION

Follow These Instructions Even if Victim Appears Dead

I. Free the Victim From the Circuit Immediately

1. Quickly release the victim from the current, being very careful to avoid receiving a shock. Use any dry non-conductor (rubber gloves, clothing, wood, rope, etc.)to move either the victim or the conductor. Beware of using metal or any moist material. If both of the victim's hands are grasping live conductors endeavor to free them one at a time. If necessary shut off current.

Begin at once to get the subject to breathe (resuscitation) for a moment of delay is serious. Use "Prone Pressure Method" for four (4) hours if necessary, or until a doctor has advised that rigor mortis has set in.

Observe the Following Precautions

(a) The victim's loose clothing, if dry, may be used to pull him away; do not touch the soles or heels of his shoes while he remains in contact—the nails are dangerous. If this is impossible, use rubber gloves, a dry coat, a dry rope, a dry stick or board, or any other **dry non-conductor** to move either the victim or the conductor, so as to break the electrical contact.

(b) If the bare skin of the victim must be touched by your hands, be sure to cover them with rubber gloves, mackintosh, rubber sheeting or dry cloth; or stand on a dry board or on some other dry insulating surface. If possible, use only **one** hand.

If the man receives a shock while on a pole, first see that his belt is secure around the pole, if possible above cross-arm so victim will not fall, then break the current. Pass a hand-line under his arms, preferably through his body belt, securely knot it, and pass the end of the line over the first cross-arm above the victim. If you are alone, pass the line once around this cross-arm. If you are not alone, drop the line to those at the base of the pole. As soon as the rope is taut, free the victim's safety belt and spurs and descend the pole, guiding the victim.

Fig. 1.

2. Open the nearest switch, if that is the quickest way to break the circuit.

3. If necessary to cut a live wire, use an ax or a hatchet with a dry wooden handle, turning your face away to protect it from electrical flash.

II. Attend Instantly to Victim's Breathing

1. As soon as the victim is clear of the live conductor, quickly feel with your finger in his mouth and throat and remove any foreign body (tobacco, false teeth, etc.). If the mouth is tight shut, pay no attention to the above-mentioned instructions until later, but immediately begin resuscitation. The patient will breathe through his nose and after resuscitation has been carried on a short time, the jaws will probably relax, and any foreign substance in the mouth can be removed. Do not stop to loosen the patient's clothing; **every moment of delay is serious.**

2. Lay the patient on his belly, one arm extended directly overhead, the other arm bent at elbow and with the face resting on hand or forearm so that the nose and mouth are free for breathing. (See Fig. 1.)

3. Kneel, straddling the patient's hips, with the knees just below the patient's hip bones or opening of pants pockets. Place the palms of the hands on the small of the back with fingers resting on the ribs, the little finger just touching the lowest rib, the thumb alongside of the fingers, the tips of the fingers just out of sight. (See Fig. 1.)

*Reprinted by courtesy National Electric Light Association.

Fig. 2.

4. With arms held straight, swing forward slowly so that the weight of your body is gradually brought to bear upon the subject (see Fig. 2). This operation, which should take from two to three seconds, **must not be violent**—internal organs may be injured. The lower part of the chest and also the abdomen are thus compressed, and air is forced out of the lungs, the diaphragm is kept in natural motion, other organs are massaged and the circulation of the blood accelerated.

5. Now **immediately** swing backward so as to completely remove the pressure, thus returning to the position shown in Fig. 3. Through their elasticity, the chest walls expand, and the pressure being removed the diaphragm descends, and the lungs are thus supplied with fresh air.

6. After two seconds swing forward again. Thus repeat deliberately twelve to fifteen times a minute the double movement of compression and release—a complete respiration in four or five seconds. If a watch or a clock is not visible, follow the natural rate of your own deep breathing; the proper rate may be determined by counting—swinging forward with each expiration and backward with each inspiration.

7. As soon as this artificial respiration has been started and while it is being continued, an assistant should loosen any tight clothing about the patient's neck, chest or waist. KEEP THE PATIENT WARM. Place ammonia near the nose, determining safe distance by first trying how near it may be held to your own. Do not give any liquids whatever by mouth until the patient is fully conscious.

8. Continue artificial respiration without interruption (if necessary, for four hours) until normal breathing is restored. Cases are on record of success after three and one-half hours of effort. The ordinary tests for death are not conclusive in cases of electric shock and doctors must be so advised by YOU, if necessary.

9. When the patient revives, he should be kept prone (face down)—and not allowed to get up or be raised under any consideration unless on the advice of a doctor. If the doctor has not arrived by the time the patient has revived, he should be given some stimulant, such as one teaspoonful of aromatic spirits of ammonia in a small glass of water, or a drink of hot ginger tea or coffee.

The patient should then have any other injuries attended to and be kept warm, being placed in the most comfortable position.

10. Resuscitation should be carried on at the nearest possible point to where the patient received his injuries. He should not be moved from this point until he is breathing normally of his own volition, and then moved only in a lying position. Should it be necessary, due to extreme weather conditions, etc., to move the patient before he is breathing normally, he should be kept in a prone position and placed upon a hard surface (door or shutter) or on the floor of a conveyance, resuscitation being carried on during the time that he is being moved.

11. A brief return of spontaneous respiration is not a certain indication for terminating the treatment. Not infrequently, the patient, after a temporary recovery of respiration, stops breathing again. The patient must be watched, and if normal breathing stops, artificial respiration should be resumed at once.

III. Send for a Doctor

If other persons are present when an accident occurs, send one of them for a doctor without a moment's delay. If alone with the patient, do not neglect the immediate and continued resuscitation of the patient for at least one hour before calling a doctor to assist in further resuscitation efforts.

A published, up-to-date list of doctors posted by the company is recommended.

IV. First Care of Burns

When natural respiration has been restored, burns, if serious, should be immediately attended to while waiting for the doctor to arrive.

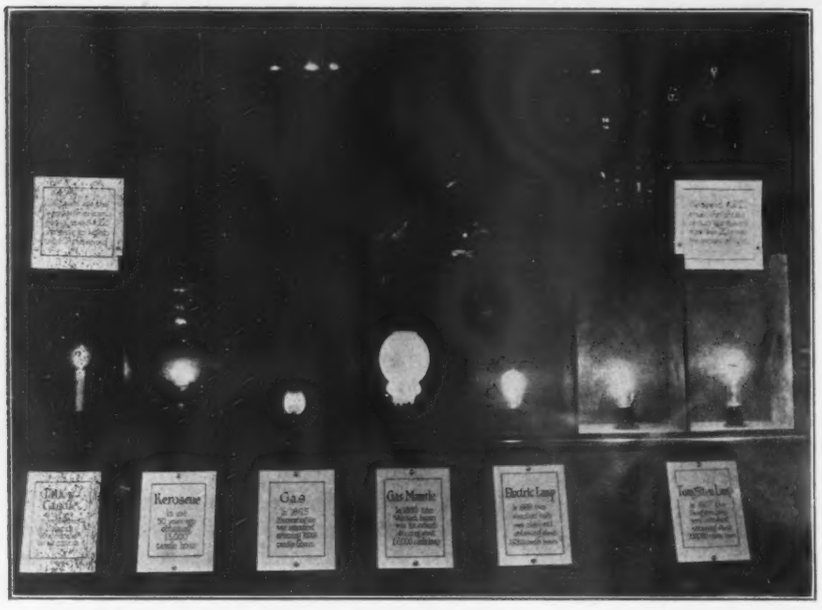
A raw or blistered surface should be protected from the air. If clothing sticks, do not peel it off—cut around it. The adherent cloth, or a dressing of cotton or other soft material applied to the burned surface, should be saturated with picric acid (0.5 per cent). If this is not at hand, use a solution of baking soda (one teaspoonful to a pint of water), or the wound may be coated with a paste of flour and water, or it may be protected with vaseline, carron oil, olive oil, castor oil or machine oil, if clean. Cover the dressing with cotton, lint, clean waste, clean handkerchief, or other soft cloth, held tightly in place by a bandage.

The same coverings should be lightly bandaged over a dry, charred burn, but without wetting the burned region or applying oil to it.

Do not open blisters.

Fig. 3.

JOBBER, DEALER AND SALES AGENT



Display showing the evolution of light presented by the Electric Lighting Supply Company of Los Angeles.

Evolution of Light Pictured in Window Display

The Electric Lighting Supply Company of Los Angeles Uses Its Window to Show Advance in Artificial Lighting

In winter I get up at night
And dress by yellow candle light.

But that poem is way out of date, as evidenced by the unique window display recently shown by the Electric Lighting Supply Company of Los Angeles, Calif. The display was designed to illustrate the changes that have taken place in lighting methods during the last century.

A century ago our grandfathers considered the tallow candle the latest thing in the line of illumination. And most of them were lucky to have that, a sperm oil lamp being the general means of lighting.

About fifty years later the candle and the sperm oil lamp were discarded, and a new means of illumination, the kerosene lamp, was introduced. From this the public obtained 13,000 candle hours, against that of 9,000 produced by the tallow candle.

Still later, in about 1885, a German inventor introduced illuminating gas on the market. However, for some considerable time this means of lighting was only on exhibition at the museums and was called "blue ghost."

The following year, 1886, another step was taken and the Welsbach burner was announced, and two years later the first electric lamp was made.

In 1907 the tungsten lamp was introduced, obtaining about 200,000 candle hours, or twenty times the amount of a century back. But how much more are we paying today? Statistics show that the average American family is spending $22 annually, which is exactly the same amount of money invested for light one hundred years ago.

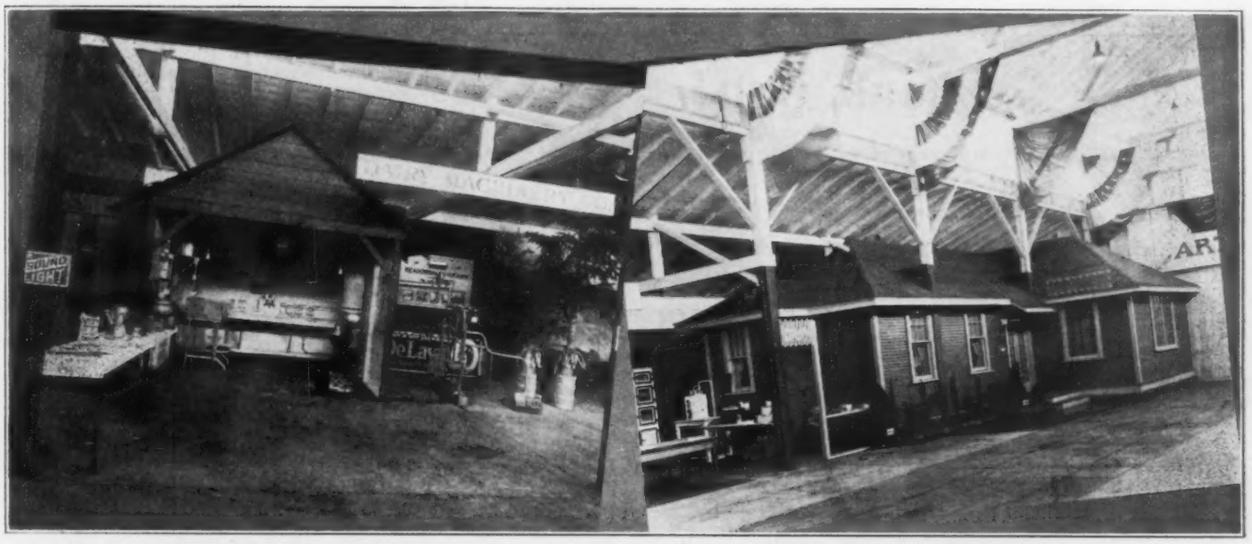
As may be seen from the accompanying illustration, all of the various forms of illumination were reproduced by the Electric Lighting Supply Company in its display, and the placards were used to explain the efficiency of the various illuminants. Each typical illuminant was enclosed in a separate cabinet, open at the front and top. At night the relative amount of light given off by each was thus forcefully shown to the pedestrians who stopped to investigate the company's display.

Utility Exhibits Model Electric Kitchen at County Fair

The exhibit of the Coast Counties Gas & Electric Company, Santa Cruz, Calif., at the Santa Cruz County Fair held in that city recently took the form of a model electric kitchen. Proper illumination, electric equipment and more convenient arrangement were the keynotes of the display. The kitchen was furnished with an electric range and water heater and a number of smaller appliances such as a toaster, percolator, portable heater and similar conveniences. Hot biscuits, roast ham and other delicacies prepared by the Coast Counties demonstrator and home economist gave substantial proof of the efficacy of the electric range.

By an arrangement of wings at each end of the kitchen setting different models of electric ranges were shown, the use of colored spot reflectors making this part of the exhibit particularly attractive.

Model electric kitchen displayed by the Coast Counties Gas & Electric Company at the Santa Cruz County Fair.



Exterior views of the model dairy and the farmhouse that were part of the Puget Sound Power & Light Company's exhibit.

Comprehensive Electric Exhibit at State Fair

Puget Sound Power & Light Company Builds Model Farm Showing Variety of Home and Farm Appliances to Crowds

Probably the most complete and comprehensive exhibit of the application of electricity to farm life ever displayed in the Northwest was that of the Puget Sound Power & Light Company, at the Western Washington State Fair, Puyallup, Wash., Sept. 29 to Oct. 5. The excellence of the exhibit was attested to by the public interest which was so great that crowds had to wait to be conducted through in small groups.

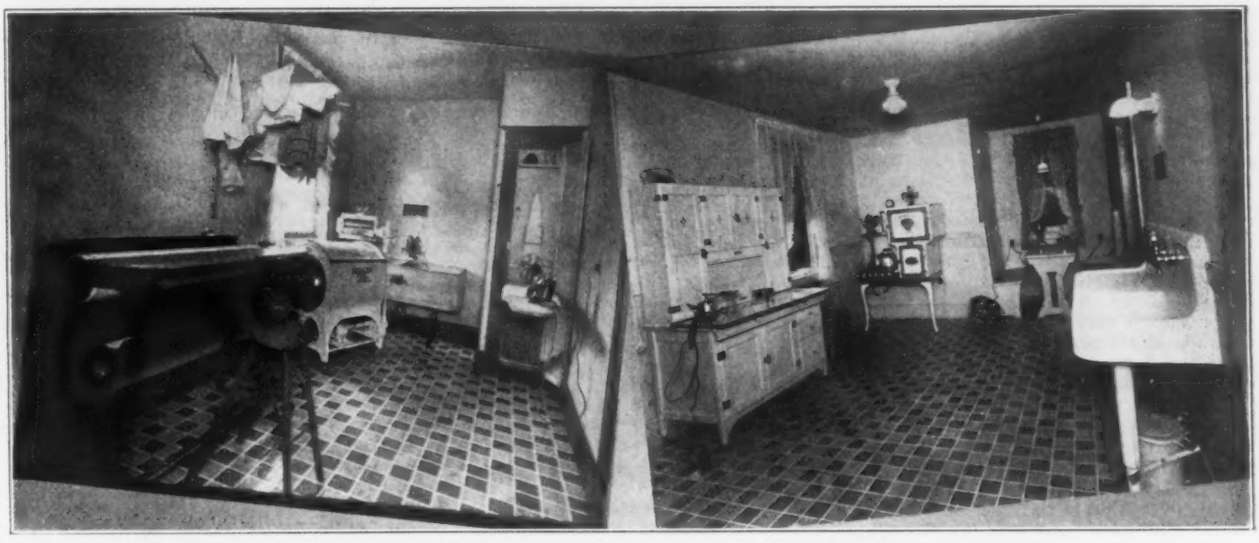
The exhibit occupied half of a new building, 170x70 ft., built at the fair grounds primarily for the electrical industry. In this space were built a permanent farm house and outbuildings representing a model farm in miniature. The home was completely equipped with lights, range, water heater, dish washer, washing machine, ironer, motor-operated oil-burning heating plant, and all the small household devices for comfort and convenience. Domestic water was supplied by an automatic, motor-driven household water system.

The blacksmith and repair shop building, adjoining the dwelling house, was completely electrified, while outside, a modern irrigation system using a motor-driven pump was shown. The chicken house was equipped with electrically heated incubators and brooders, and the silo was filled by a motor-driven cutting machine.

One of the finest and most interesting units of the exhibit was the model dairy, in which electric milkers, separators and bottle washers were featured. In this part of the exhibit the company cooperated closely with the state dairy department to show the most modern sanitary methods advocated by the department.

The idea of the exhibit was worked out by the sales department of the Puget Sound Power & Light Company, and put into effect largely through the efforts of R. T. Sinex, of the drafting division of the company, who designed and superintended construction of it. Thorough cooperation was obtained from the manufacturers of the appliances and equipment demonstrated, and all concerned were rewarded by the fact that the exhibit drew greater crowds than any other single feature of the fair. The success of the venture contributed to the determination of the company to make the event an annual one, and further advances in the art of telling the electrical story may be expected next year.

The Jack Frost Electric Company, 501 Union Avenue, Portland, Ore., is the name of a new retail electric shop. It is located in one of the main retail districts of the east side where, with an attractive interior arrangement and modern window lighting, it is appealing to the shoppers of that district with a complete line of small appliances as well as the Thor line of washing machines and ironers and Premier vacuum cleaners.



The rooms in the farmhouse were also fitted with modern electrical appliances so that the housewife might do her work with as little effort as necessary.

Thank You!
YOUR purchase is appreciated and so we "thank you." We hope you will patronize us again.
We aim to make our store and our business as attractive as any down-town establishment. If you can suggest any improvements please let us know.
WESTWOOD ELECTRIC CO.
1608 OCEAN AVE
PHONE RAND 121
SPECIALISTS IN ELECTRICAL APPLIANCES
VICTROLAS - VICTOR RECORDS

It pleases the customer to know that the merchant appreciates getting the business

Do You Say "Thank You" When Money is Received?

Two San Francisco Dealers Use Specially Designed Slips and Cards to Thank Their Customers

By CLOTILDE GRUNSKY

"Thank you. Here is your change. Please call again."

"That's one reason why I go there in preference to any other store. Frankly, I like to be thanked when I turn my money over to the girl at the cash register." How often have you heard that and felt the same way? When you make a purchase don't you like to know that the merchant appreciates your trade? Don't you feel more like reaching into your pocket for the money when you know that you will be thanked by a smiling salesman? Of course you do and the people that trade at your store react to a smile and a "Thank you" in the same way that you do.

Who likes to trade at a store where the customer is made to feel that the salesman is doing him a favor to wait upon him? Who likes to receive the impression that the merchant feels that it is his right to take the money from the purchaser and that the seller is doing the buyer a favor by condescending to allow the latter to trade in the store?

Maybe it is the fact that competition for business has made it necessary for the merchant of today to show the customer that he appreciates his business and maybe the merchant has, of his own volition, decided that the customer is entitled to courteous and appreciative treatment. Regardless of what the cause is, it must be admitted that the buying public has come to realize that the purchaser is entitled to every consideration at the hands of the salesman. If Mrs. Brown cannot get courteous service at one store, she knows there are other establishments anxious to get her trade and she will go there. If, however, the clerks at Smith's welcome her with a smile and thank her when she makes a purchase, she will prefer to trade at the store with which she is acquainted and it will take considerable effort to draw her over to Black's across the street.

Purchasers of electrical appliances are the same class of people that appreciate courtesy in other retail establishments. They expect courteous treatment and it is up to the electrical dealer to see that they receive it. A "Thank you" given in receipt for the purchaser's cash will often round out the favorable impression that the salesman has made upon the customer and will make certain the good will of the individual. And the best part of it is that the investment in "Thank you" costs the dealer nothing and the return on the investment is limitless.

An electrical dealer with a store in the residential section of San Francisco has decided that a small investment in "Thank you" would bring in excellent returns. Eric M. Unmack, the manager of the Westwood Electric Company, in addition to giving instructions that customers were to be personally thanked for any business that they might do with the store, recently secured a large supply of small paper slips that carried the "Thank you" to the purchaser's home. Directions were given that one of the slips were to be placed inside of every small package that was taken from the store. Thus when a lamp or any small appliance is bought from the Westwood Electric Company, one of the slips is wrapped inside of the package so that when the customer arrives at home the "Thank you" message is presented again.

The slip creates good will for the dealer and in addition impresses the firm name upon the mind of any new customer. The address and telephone number appear on the slip so that the customer will have no trouble in either locating or telephoning the store. As the concern is classed as a neighborhood store, the statement on the slip, "We aim to make our store and our business as attractive as any down-town establishment," is particularly useful.

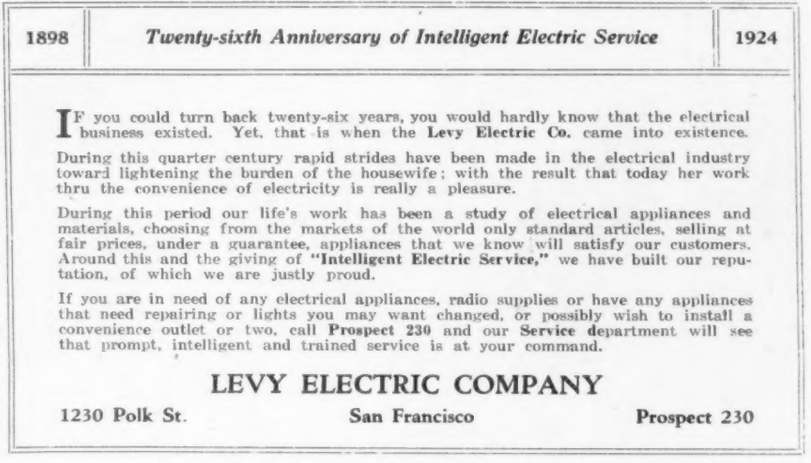
The "Thank you" slips are used only in connection with the smaller appliances. To purchasers of washing machines, ironers, and vacuum cleaners Mr. Unmack writes a personal letter thanking them for their patronage and stating that it is the desire of the Westwood Electric Company to see that the purchaser is entirely satisfied with the appliance that the company has recently delivered.

The Levy Electric Company has also prepared a printed card that is designed to inform the public that the concern is anxious to give courteous service to its customers. The card used by the Levy company has been found to be particularly useful in connection with handling complaints of customers. In case a dissatisfied customer enters the store in an excited condition, the clerk politely refers the question to the manager of the store. The manager after ascertaining the cause of the trouble endeavors to adjust the matter to the customer's satisfaction and just before he or she leaves the store, the manager offers the card, which on the front side carries the following selected inscription:

"THE OPTIMIST'S CREED

"Promise Yourself—

"To be so strong that nothing can disturb your peace of mind. To talk health, happiness and prosperity to every person you meet. To make your friends feel that there is something in them. To look at the sunny side of everything and make your optimism come true. To think only of the best, to work only for the best and to expect only the best. To be just as enthusiastic about the success of others as you are about your own. To forget the mistakes of the past and press on to the greater achievements of the future. To wear a cheerful countenance at all times and give every living creature you meet a smile. To give so much time to the improvement of yourself that you have no time to criticise others. To be too large for worry, too noble for


1898
Twenty-sixth Anniversary of Intelligent Electric Service
1924
IF you could turn back twenty-six years, you would hardly know that the electrical business existed. Yet, that is when the Levy Electric Co. came into existence.
During this quarter century rapid strides have been made in the electrical industry toward lightening the burden of the housewife; with the result that today her work thru the convenience of electricity is really a pleasure.
During this period our life's work has been a study of electrical appliances and materials, choosing from the markets of the world only standard articles, selling at fair prices, under a guarantee, appliances that we know will satisfy our customers. Around this and the giving of "Intelligent Electric Service," we have built our reputation, of which we are justly proud.
If you are in need of any electrical appliances, radio supplies or have any appliances that need repairing or lights you may want changed, or possibly wish to install a convenience outlet or two, call Prospect 230 and our Service department will see that prompt, intelligent and trained service is at your command.
LEVY ELECTRIC COMPANY
1230 Polk St.
San Francisco
Prospect 230

The reverse side of the Levy Electric Company card carries the firm's business message.

anger, too strong for fear, and too happy to permit the presence of trouble."

The message is printed on a good grade of buff colored paper in three colors. It presents an attractive appearance and carries the message that it was presented by the Levy Electric Company. On the reverse side, the company has prepared a message featuring the service that it has given to the public in the time that it has been in business in San Francisco. Address and telephone number appear in prominent positions at the bottom of the card. In this way the dealer's name was kept before the reader.

The dominant message behind both of these card forms is that the dealer appreciates the business of the customer. Both dealers hope to make a return customer of the purchaser and desire to give the best attention possible to the wants of the individual. The slips and cards used by each dealer could be secured at nominal cost and in all probability would add considerably to the amount of business transacted.

Are Electrical Dealers Making the Most of Radio?

Music Dealers Cornered the Talking Machine Business and Are Now Competing in Force in the Radio Field

By E. F. McDONALD, Jr.,
President, Zenith Radio Corporation

The electrical dealer has a big lesson to learn from the music merchant. This is a rather startling statement to make, but nevertheless it is perfectly true that unless the electrical dealer wakes up to the need of advertising, the radio end of his business will slip out of his hands.

Take for example the relative amount of advertising done by the two classes of dealers. In a recent Sunday issue of the Chicago Tribune there appeared

8,617 lines of music dealers' advertising
714 lines of radio manufacturers' advertising
196 lines of electrical dealers' advertising on washing machines
434 lines of radio dealers' advertising.

Not a line of electrical dealers' advertising of radio apparatus.

Time was when the talking machine was handled by the hardware dealer, the nickelodeon, the penny arcade, and the drug store. When the music dealer saw that this new toy was cutting into his business, and upon inquiry became convinced he could sell the talking machine with profit to himself, he added it to his other merchandise and eventually took the business away from the others by dint of advertising. Now radio is cutting into the music business and is being eyed by the music dealer not with reproach, but with an interest that bodes ill to the electrical dealer. Undoubtedly, the electrical dealer will lose his hold on radio if he doesn't make a determined effort. He will have to use printers' ink—lots of it.

There were a great many people with a few hundred dollars to spend who read the Chicago Tribune above referred to, and who were so impressed by the preponderance of the piano man's arguments in favor of a new piano that on Monday morning, or some time during the following week, they purchased a piano, whereas they might have been more easily persuaded to invest their money in a radio set. But the radio dealer did not shout loud enough. And the electrical dealer stood by speechless. On this occasion he made no attempt to cajole the public into buying some of his wares, including radio.

When one stops to think of the difference in intrinsic interest between a piano and a radio set, the music merchant is doing and has done a very creditable job. He has convinced the American public that the home is incomplete without a piano—without an article which only a very few people will use, if at all. For the most part, the piano, just as any piece of furniture, stands quietly and unobtrusively in the home. Once in a while, it will be pressed into service when a visitor able and willing to play will call forth some charms hidden back of the front panel. If there are children in the family, the piano, unwillingly, to be sure, hurts the ears of those who have to listen to the efforts, feeble or otherwise, of those who have hopes of learning how to play after five years of practicing. But the piano man has said that the piano is necessary in the home. He has said that so much and so often most of us have taken him at his word.

On the other hand, the radio set, which is really a fascination, even to such an extent as to encroach upon the convention and propriety of "early to bed and early to rise," is only known as a truly entertaining device by comparatively a handful of people. Of course, it is true that a good many radio sets are being sold by word-of-mouth recommendation. But widespread and countless sales readily would follow if the electrical dealer shouted his wares from the housetops as does the music merchant his.

The alarming thing for the electrical dealer is that the music merchant is beginning to realize radio is a suitable adjunct to the music business. It is sold in precisely the same way as a piano or a talking machine. And already we hear of phenomenal success here and there of music houses handling radio. Without doubt, the largest radio dealer in the city of Chicago is a music house.

The electrical dealer better beware of the music merchant's competition! If he doubts what I say, let him go through half a dozen music stores and pretend being interested in a piano or a talking machine. If he holds his eyes wide open, he will notice first of all the attractiveness of the store; in the next place, the ready and gracious attention on the part of employees; and in the third place, subtle, yet aggressive salesmanship; finally, unusual equipment, such as booths, comfortable chairs, artistic touch of pictures, and furnishings in general. A comparison of the music merchant's place of business with his own might be very helpful. No need of going into any greater detail, for I simply want to point out the fact that there is even on the surface quite a difference to the eye of the casual observer, between the music merchant's place of business and that of the electrical dealer.

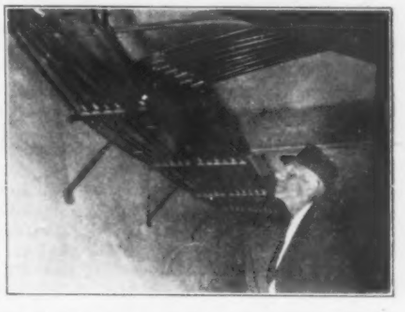
And there is a corresponding difference between their methods of doing business, the principal one being that to which I have already referred—advertising.

If it were not for advertising, the music merchant could never have become the successful business man that he is. If this observation of mine will excite the curiosity of the electrical dealer to see himself in perspective, I shall have accomplished all that I possibly could hope to do. He will see himself in true proportion by making the visit that I have attempted to describe and also by occasionally looking through the newspapers to see the relative bid for business that is being made as between him and the music merchant.

And as a parting thought, any man that advertises radio this summer will be kept busy, because radio's appeal does not lessen in the warm weather, even though static will shut off the more remote stations. Good radio sets will furnish diversion in abundance both at home and while summering away. Radio becomes a seasonal business for only such as make it so. The live ones will advertise this summer and they will do as well as in the winter, because competition will be negligible—the dead ones will spend the time complaining about the summer.

Electrical Installation Stands Up for Twenty-Six Years

A little over twenty-six years ago H. N. Beecher, now chief electrical inspector of Los Angeles, Calif., made an electrical installation in the Hotel Green at Pasadena, Calif. In accordance with common practice at that time, paper conduit with tin sleeves was used and the wire was standard rubber covered. The building, a class



H. N. Beecher, chief electrical inspector of Los Angeles, Calif., installed this equipment over twenty-six years ago and recently had an opportunity to inspect it again when the building was remodeled.

A structure, is now being remodeled into apartments and Mr. Green recently had the opportunity of inspecting again the work he had installed. The conduit and wire were both found in excellent condition; in fact, little, if any, wear was discernible. Due to the extensive remodeling involved in the present rearrangement of the building the old conduit is being replaced with flexible metallic conduit.

Sangamo Electric Company, Springfield, Ill., has published Bulletin No. 68, descriptive of its Type N amperehour meters. It is well illustrated with cuts of meters and parts.

INDUSTRIAL NEWS

To Continue Hetch Hetchy Work Despite Controversy

As the result of considerable discussion by the San Francisco Board of Supervisors on the Hetch Hetchy water supply project of the city, on Nov. 24, Ralph McLeran, acting mayor, ordered the Board of Public Works to discontinue work on certain parts of the project, where about 500 men are employed. An injunction secured by a taxpayer, holding up the stop order, prevented the closing down of work. Pending court action on this injunction the construction is continuing with full crews.

Supervisor McLeran, during the absence from the city of Mayor Rolph, brought before the Board of Supervisors figures to show that the 1910 bond issue for $45,000,000 was practically exhausted and that there were insufficient funds for completing the mountain division. In addition to the order to stop work, the acting mayor endeavored to secure the passage of an ordinance repealing the 1913 ordinance that gave the city engineer complete authority to make plans, let contracts and purchase materials for "the acquisition, construction and completion of the municipal water supply." This endeavor has been unusccessful up to Nov. 29. Mayor Rolph is understood to be opposed to any Hetch Hetchy shutdown.

The fundamental difference between the acting mayor and the city engineer seems to be in the allocation of moneys received (1) from the sale of power from the Cherry Creek plant and (2) from operation of the Hetch Hetchy railroad. "Money received from these two sources," Mr. O'Shaughnessy, city engineer, states, "amounts to $1,500,000, from which we got back only $300,000, so there is $1,200,000 from these sources that should be credited to the project."

In an interview with a McGraw-Hill Company representative, Mr. O'Shaughnessy said that, taking into account the railroad earnings, proceeds from power sales and salvage on construction equipment, there are still ample funds available from the 1910 bond issue for the completion of the mountain division. To stop the work just at this time would cause extensive and wholly unnecessary waste due to the disorganization of crews in camps that are on the point of finishing up their work, not to mention the loss of materials at the Early Intake diversion dam and other losses that would attend a sudden and unexpected shutdown.

The present status of the work is as follows: The placing of concrete lining in the 18-mi. tunnel can be completed in about 40 days at the present rate of 1,000 ft. per day. Work at Early intake can be finished within two months, and this, plus the completion of the South Fork bridge, of which only about 100 ft. remains to be erected, will practically finish all construction on the mountain division or upper end of the project. Moccasin Creek power house and the 154,000-volt transmission line to San Francisco are expected to be ready for service early next year.

Utilities Commissioners Convene at Phoenix, Ariz.

The National Association of Railway and Utilities Commissioners held its annual convention at Phoenix, Ariz., Nov. 11-14. From the points of enthusiasm and attendance, thirty-five states being represented, it was considered one of the best meetings held in years.

M. H. Aylesworth, executive manager of the N.E.L.A., briefly outlined the progress being made in interconnection and superpower systems throughout the country, and pictured the effect of this linking of systems upon the economic future of the nation. That much interest had been aroused was evidenced by the general discussion that followed. In order that those most familiar with this particular activity might have an opportunity to present the subject in all its aspects, it was decided to set apart at the next annual meeting a special day for complete discussion of the matter.

That the state commissions should retain and exercise their jurisdiction over electric utilities was cited as a necessity by Mr. Aylesworth, in speaking on this subject. He described the way power development would be hampered if, by the exercise of federal authority through a bureau at Washington, such state jurisdiction should be materially curtailed. The necessity for cooperation between the various commissions and the advantages resulting from uniformity in state regulatory practice were also stressed in this speech.

An exhaustive report made by the standing committee on government ownership strongly advocated private ownership.

The relations between the public utility commissioners and the regulated utilities was the subject of the address made by H. C. Abell, recently elected president of the American Gas Association. Other speakers were C. D. Jackson, counsel for the National Electric Light Association; J. N. Shannahan, president, American Electric Railway Association, and W. N. Sproule, president, Southern Pacific Company.

D. B. Ainey, president, Pennsylvania Public Service Commission, was elected president of the association.

City of Los Angeles Enters Joint Pole Committee.—The City of Los Angeles recently has become a member of the Joint Pole Committee in southern California.

Federal Action May Be Taken on Colorado River Projects

With the Colorado River compact as the chief issue in the state campaign, Arizona reelected Governor Hunt. This is believed to end all hope of ratifying the interstate treaty. While final action must be taken by the legislature, it is anticipated that that body will interpret the election as a mandate from the people and will preclude the ratification of the compact.

Reports from Washington indicate that it is probable that the Federal Power Commission will withhold action on Colorado River projects until it has been established definitely that the treaty will not be ratified. The legislature will be in session from January to April. Once that it is established that Arizona will not ratify the treaty it is expected that the commission will proceed with the granting of rights on the Colorado.

A new complication exists, however, in the Girand application for rights on the Colorado at Diamond Creek. Arizona has taken a position contrary to that of any other Western state in contending that Mr. Girand has lost his state rights by failure to continue construction work, regardless of the fact that he was forced to discontinue work by a federal injunction. While the Federal Power Commission is committed, morally, at least, to grant the Girand license, it is entirely possible that the issuance of the license may be delayed further pending the outcome of litigation as to the validity of his state rights.

Developments may come rapidly on other phases of the Colorado River problem. Dr. Elwood Mead, the new commissioner of reclamation, has announced that he is not committed to the Boulder Canyon dam proposal. The presidential election demonstrated anew the overwhelming popularity of private ownership of utilities. This is thought to insure the speedy demise of the Swing-Johnson bill. A report has reached Washington to the effect that Los Angeles is planning to apply for rights in Boulder Canyon with the idea of financing the development itself.

While these various matters are being determined, further engineering studies on the lower Colorado are being urged. These studies could establish more definitely than is known now the character of projects which fit best into the full development of the river. In that connection it is also being urged earnestly that immediate steps be taken to secure a treaty with Mexico to determine definitely the rights of each country in connection with the waters of the Colorado and of the Rio Grande.

Western Power Corporation Has Option on San Joaquin

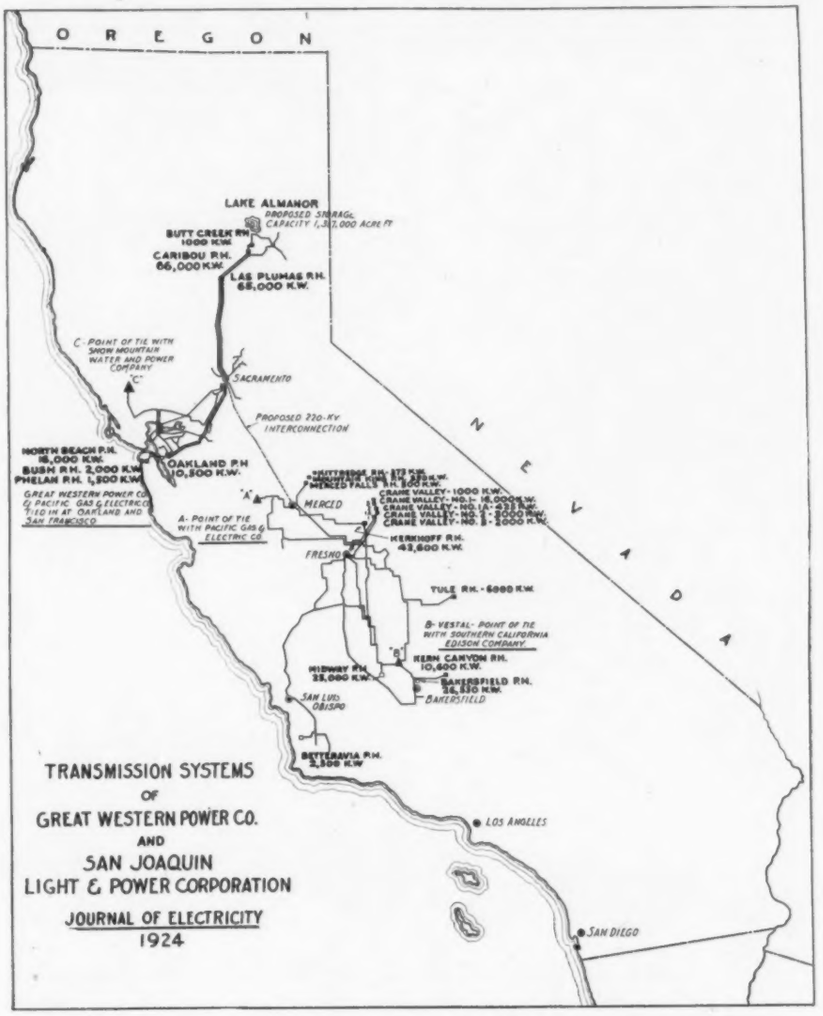
An option for the purchase of the San Joaquin Light & Power Corporation has been secured by the Western Power Corporation of New York, holding company for the Great Western Power Company. According to reports from New York a purchase price has been agreed upon and negotiations have reached the point where the final exercising of the option may be expected at any time. With the accumulation of a few individual holdings of San Joaquin stock, it is reported that papers closing the deal will be signed.

Hinging upon the completion of the deal is one of the greatest hydroelectric development programs announced by a Western utility in many years. Immediately upon the consolidation of the two companies work will start on raising the Big Meadows dam at Lake Almanor 45 ft. increasing the storage capacity of this reservoir to 1,317,000 acre-ft. Lake Almanor will then have a greater capacity than the present combined capacity of all the reservoirs in the state of California. A fourth generating unit of 22,000 kw. will be also installed at the Caribou plant on the Feather River, increasing the capacity of that station to 88,000 kw.

It is also planned to interconnect the Great Western and San Joaquin systems with a 220,000-volt tie-line extending from Brighton substation near Sacramento to Merced. This line will later be extended to Fresno. Should this line be interconnected with the 220,000-volt lines of the Pacific Gas and Electric Company and the Southern California Edison Company, California would then have a 220-kv, trunk transmission line extending from the Pit River plants on the north to Los Angeles.

The extent of the Great Western and San Joaquin systems together with the capacities of the various steam and hydro plants operated by each are shown on the accompanying map.

Closely allied with the consolidation is the announcement of the resignation of Mortimer and Herbert Fleishhacker as president and vice-president respectively of the Great Western Power Company, and the sale of their holdings in the company. This marks the withdrawal of these two from the utitlity field in California although they still control the Northwestern Electric Company of Portland, Ore. In their places the board of directors of the company has elected Guy C. Earl as president and J. B. Black as vice-president. Mr. Earl is also vice-president of the California Electric Generating Company, a subsidiary of the Great Western, the City Electric Company, the Consolidated Electric Company and the San Francisco, Napa and Calistoga Railway. J. B. Black was general manager of the Great Western.


OREGON
LAKE ALMANOR
PROPOSED STORAGE CAPACITY 1,317,000 ACRE FT
BUTT CREEK P.H. 1000 K.W.
CARIBOU P.H. 66,000 K.W.
LAS PLUMAS P.H. 68,000 K.W.
C- POINT OF TIE WITH SHOW MOUNTAIN WATER AND POWER COMPANY "C"
SACRAMENTO
PROPOSED 220-Kv INTERCONNECTION
NEVADA
NORTH BEACH P.H. 15,000 K.W.
BUSH P.H. 2,000 K.W.
PHELAN P.H. 1,500 K.W.
GREAT WESTERN POWER CO. OF PACIFIC GAS & ELECTRIC CO. TIE-IN AT OAKLAND AND SAN FRANCISCO
OAKLAND P.H. 10,500 K.W.
A- POINT OF TIE WITH PACIFIC GAS & ELECTRIC CO.
MERCED
CRANE VALLEY - 1000 K.W.
CRANE VALLEY - NO. 1- 16,000 K.W.
CRANE VALLEY - NO. 1A- 432 K.W.
CRANE VALLEY - NO. 1 - 2000 K.W.
CRANE VALLEY - NO. 2 - 2000 K.W.
KERKHOFF P.H. 43,600 K.W.
FRESNO
TULE P.H. - 6000 K.W.
B- VESTAL - POINT OF TIE WITH SOUTHERN CALIFORNIA EDISON COMPANY
KERN CANYON P.H. 10,600 K.W.
BAKERSFIELD P.H. 26,850 K.W.
BAKERSFIELD
HIDWAY P.H. 35,000 K.W.
SAN LUIS OBISPO
BETTERAVIA P.H. 2,500 K.W.
LOS ANGELES
SAN DIEGO
TRANSMISSION SYSTEMS OF GREAT WESTERN POWER CO. AND SAN JOAQUIN LIGHT & POWER CORPORATION
JOURNAL OF ELECTRICITY
1924

Map of Great Western Power Company and San Joaquin Light & Power Corporation systems showing location and capacities of steam and hydro stations and proposed 220,000-volt interconnection.

High Tension Line Completed by California Oregon Company

Construction of the 110,000-volt line that will act as a new tie between the systems of the California Oregon Power Company and the Pacific Gas and Electric Company has been completed by the former company. The new line extends from the site of the Copco No. 2 plant of the California Oregon company south to Delta, Calif., from which point the Pacific Gas and Electric Company will transmit the energy at 220,000 volts on its Pit River line. An extension of the Pit River line to Delta is now being made by the latter company.

The California Oregon company's line that has been completed is known as Line 14 and is 77½ mi. long. The northern and middle sections of this line pass through flat and rolling country, whereas the southern end is in a rough and mountainous region. Two-pole, H-frame construction is used on the line on which the average span is 600 ft., the greatest being 1,539 ft.

The new line, designed to transmit energy from the Copco No. 2 plant to the substation of the Pacific Gas and Electric Company at Delta, is being used at present to transmit energy generated at other plants of the Copco system. Copco No. 2 plant, now under construction, will have a capacity of 30,000 kw. The plant will probably be completed before the middle of 1925. The entire output of the plant will be wholesaled to the Pacific Gas and Electric Company.

Smiles Contests Entries Will Be Received Until Dec. 18

To permit a greater participation in the two contests being conducted by the Courteous Service Club Committee of the Pacific Coast Electrical Association, the committee has extended the duration of the contests by two and one-half weeks, making the closing date Dec. 18 instead of Dec. 1. An effort will be made to announce the prize winners in the Jan. 1, 1925, issue of the Journal of Electricity.

Answers to the contests have been coming in rapidly, and indications are that by extending the contests the Courteous Service Club Committee will have a large number of entries from which to pick the winners. Complete information regarding the contests may be secured from the announcement which appears on page 423 of this issue.

Attorney Not Needed for Conducting Business With Federal Power Commission.—Attention is being called to the fact that negotiations with the Federal Power Commission usually do not require the services of an attorney. Most of the transactions with the commission must be reduced to writing for matters of record, and only delay results when this correspondence must be carried on through a representative of the party at interest. There have been recent instances in which persons with nothing more than routine business to transact have been of the opinion that it was necessary to employ a person on the ground for that purpose.

Contracts for Exchequer Power Plant Equipment Awarded

The Pelton Water Wheel Company has been awarded the contract for the two 24,500-hp. vertical reaction turbines, oil pressure systems and governors for installation in the new Exchequer plant now being built by the Merced Irrigation District, on the Merced River, 35 mi. east of Merced, Calif. These turbines will be direct-connected to two 15,000-kva. generators, which will be furnished by the Westinghouse Electric & Manufacturing Company.

In the turbine equipment will be combined the most advanced features of design that have been developed by Pelton engineers and their associates of the I. P. Morris department of the Cramp Company of Philadelphia. Each unit will be equipped with a Moody spreading draft tube, sections of which are removable to facilitate inspection or replacement of runner and wearing rings. The main shaft will be hollow-bored to permit the handling of removable parts by cable from the overhead crane.

Two complete oil pressure systems are to be provided, each of a capacity sufficient to operate both governors at one time. The governors will be specially designed for complete remote control and will also include emergency shut-down and load-limiting devices.

Because of the fact that irrigation will have precedence over power in the Exchequer development, the turbines are designed to provide best efficiency under heads ranging from 300 ft. maximum to 140 ft. minimum. The Exchequer reservoir, in normal years, will impound sufficient water between the months of February and May to run the plant at full capacity for five months. The units are to be shut down entirely when the minimum head has been reached.

The power from both generators will be stepped up to 120 kv. through one bank of transformers to be furnished by the General Electric Company. A single circuit 120-kv. transmission line will tie into the existing distribution system of the San Joaquin Light & Power Corporation, which will absorb the entire output at the switchboard of the Exchequer plant.

New Line an Important Link in Puget Sound System

To improve transmission conditions in its southwestern district and to furnish additional capacity for its southern district, the Puget Sound Power & Light Company recently completed the construction of a high-tension transmission line from the Electron plant to Tenino, Wash., a distance of 38½ mi. The line, which was built under the supervision of K. C. Schluss, superintendent of power and equipment of the southwestern district, Tacoma, completes a loop taking in the White River and Electron plants and the districts around Tacoma, Olympia and Tenino, giving these districts the advantage of a double feed.

The improvement, which has cost approximately $285,000, includes also a new substation at Fern Hill, near Tacoma, and an increase in the capacity of the Tenino substation from 1,500 kw. to 5,000 kw., which materially augments the possible supply to the southern district from the north. Other sources of supply to the southern district are a 1,500-kw. steam plant at Chehalis and a 600-kw. hydroelectric plant at Kalama.

The new line, which will be operated for the present at 55,000 volts, is constructed with clearance and insulation for 110,000 volts, and, being of 4/0 stranded copper, will have a carrying capacity at the higher voltage of more than 20,000 kw. The construction is on single poles, with the conductors suspended on two arms, one on top and two on the bottom arm. The top conductor is staggered from one side to the other on alternate poles so as to avoid having one conductor directly above the other in the same vertical plane.

Ferry Driven by Electricity Is Unique Installation

A unique application of electric power is found in an electrically driven ferry boat operating on the Willamette River at Independence, Ore. The boat is driven by a 20-hp., 440-volt, 3-phase motor, connected to side wheels through a Fordson tractor transmission, giving high and low speed and reverse. Four hundred and forty volt power is supplied by the Mountain States Power Company, Albany, to a trolley circuit consisting of three ⅜-in. galvanized steel cables stretched 1,200 ft. across the river. Trolley wheels supported on a pantograph, and a three-conductor flexible cable complete the electrical connection to the motor.

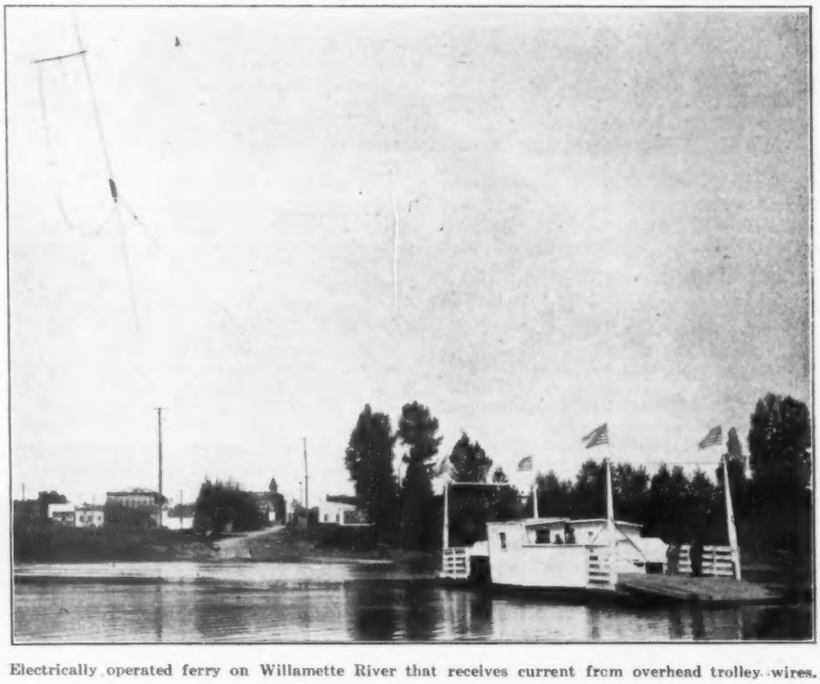
The electric drive replaced a gasoline engine with propeller. Under the old system of engine drive, a round trip took from fifteen to thirty minutes, the operating cost averaged $150 per month, and there were frequent tie-ups for repairs. With the electric drive, the ferry operates continuously and can make a round trip in less than five minutes. Over a period of five months, during the busiest season of the year, the power cost has averaged $60 per month. The ferry is owned by the adjacent counties and renders free service.

Seattle Applies for Permit for Ruby Dam on Skagit

As a preliminary step in the continued development of the Skagit River by the city of Seattle, Wash., an application has been filed with the Federal Power Commission by that city for permission to dam the river just below the mouth of Ruby Creek. The dam, which is to be 480 ft. high and 1,000 ft. long, is to create a large storage reservoir and develop approximately 300,000 hp. As this development has been planned, the water is to be carried 3¼ mi. through a 28-ft. pressure tunnel to the power house located just above the mouth of Stetattle Creek. The site of this development is from 7 to 10 mi. above the present Gorge Creek power house on Skagit River, placed in operation by the city in September of this year. (Journal of Electricity, Oct. 15, 1924, page 304.)

Since the Gorge unit was put in service, the city officials have been considering what should be the next step in the Skagit development, opinion being divided between two possibilities. It is understood that one group of officials, including E. J. Brown, mayor, and C. F. Uhden, Skagit engineer, favors the immediate construction of the Gorge dam. This would raise the head at the present power house about 100 ft. and would permit running the present installed units at their full capacity during such time of the year as there is sufficient water in the river. Another group, however, favors the construction of the Ruby development, to increase materially the hydroelectric output of the municipal system, as well as to regulate the flow of the river, by means of the storage created, so as to deliver to the turbines in the Gorge plant an even flow of water the year round.

Mayor Brown has appointed J. D. Blackwell, city engineer; J. D. Ross, superintendent of the city light department, and C. F. Uhden to prepare a complete report covering all angles of both developments. No decision has been reached.



Electrically operated ferry on Willamette River that receives current from overhead trolley wires.

J. P. LOTTRIDGE.

R. B. KING.

A. N. CUDWORTH.

N. W. BROCKETT

Northwest Association Chairman Appointed by President

Appointments of section chairmen for the Northwest Electric Light & Power Association have been announced as follows by President R. M. Boykin, manager southern district, Puget Sound Power & Light Company, Portland, Ore.: Chairman, accounting section, A. N. Cudworth, auditor, Northwestern Electric Company, Portland; chairman, technical section, H. H. Schoolfield, chief engineer, Pacific Power & Light Company, Portland; chairman, commercial section, J. F. Orr, sales manager, Idaho

R. M. BOYKIN

Power Company, Boise, Idaho; general chairman, public relations section, W. H. Ude, director of public relations, Washington Water Power Company, Spokane, Wash. The following are the district chairmen of the public relations section: For Oregon, J. P. Lottridge, vice-president, Eastern Oregon Light & Power Company, Baker, Ore.; for Washington, Norwood W. Brockett, director of public relations, Puget Sound Power & Light Company, Seattle, Wash.; for Idaho, R. B. King, general superintendent, Idaho Power Company, Boise. W. A. White, chief engineer southern district, Puget Sound Power & Light Company, Portland, is the new secretary and treasurer of the association.

Seattle Takes Over Substations at Appraiser's Price

The City of Seattle will take over from the Puget Sound Power & Light Company the substations at North Seattle and Fremont, furnishing current for the operation of the street railway, at a total cost of $141,317, the value agreed upon by a board of appraisers. A bill has been introduced in the council providing for payment of the award by a temporary loan from the light fund to the 1921 municipal light extension bond construction fund.

The transfer of the substations means that the city light plant will take over a load of 5,000 kw. for the operation of the street cars now furnished by the company at 1 cent per kw-hr. When the street railway lines were purchased several years ago by the city, an agreement was entered into whereby the city would take over the substations, when the city had the power to operate them, at a price to be fixed by a board of appraisers.

H. H. SCHOOLFIELD.

W. A. WHITE.

W. H. UDE

J. F. ORR

Publicity Section Reorganized at San Francisco Meeting

Plans for the coming year were outlined at a meeting of the Publicity Section of the P.C.E.A. held in San Francisco Nov. 21. A. C. Joy, San Joaquin Light & Power Corporation, chairman of the section, presided.

The section was completely reorganized along the lines suggested at the 1924 convention of the association at Coronado. The new plan calls for the organization of three bureaus, each charged with definite work in connection with the publicity and advertising campaigns of the utilities and manufacturers. The first of these is a bureau of technique composed of committees for the study of advertising, news, illustrations, motion pictures and internal publications. The better business bureau will be composed of a committee on standards and one on cooperative methods. The information bureau will act as a clearing house for the interchange of ideas and material between companies and for the spreading of general publicity stories on the industry and its progress.

The personnel of the section follows: A. C. Joy, San Joaquin Light & Power Corporation, chairman; C. H. Peirson, Southern California Edison Company, vice-chairman; F. S. Myrtle, Pacific Gas and Electric Company, secretary; B. S. Allen, Key System Transit Company; J. F. Pollard, Coast Valleys Gas & Electric Company; A. M. Frost, San Joaquin Light & Power Corporation, and G. C. Tenney, Journal of Electricity, executive committeemen.

Bureau of Technique: B. S. Allen, chairman; committee on advertising, J. C. Jordan, Pacific Gas and Electric Company, chairman; committee on news, C. H. Peirson, chairman; committee on internal publications, F. S. Myrtle, chairman; committee on illustrations and motion pictures, G. C. Tenney, chairman.

Better Business Bureau: J. F. Pollard, chairman; committee on cooperative methods, M. W. Scanlon, Westinghouse Electric & Manufacturing Company, chairman; R. D. Brigham, Great Western Power Company; V. W. Hartley, California Electrical Cooperative Campaign; A. G. Jones, General Electric Company; committee on standards, F. Z. Stone, Southern Sierras Power Company, chairman; R. E. Smith, Southern California Edison Company; C. L. Burgess, Westinghouse Electric & Manufacturing Company; W. A. Cyr, San Diego Consolidated Gas & Electric Company; C. A. Luckenbach, Los Angeles Gas & Electric Corporation.

Information Bureau: G. C. Tenney, chairman.

Minor Changes Made in Extension Rules by Oregon Commission

Because a year's experience in the operation of the electric extension rules in Oregon had demonstrated that certain changes were needed to make them more practicable, the Public Service Commission of that state recently issued an order making some modifications in them. No changes of major importance are included in the new order, which was made effective Sept. 1, 1924, but in general it may be said that the accounting requirements were considerably lightened.

The principal change to be found in the new order is in that rule requiring the repayment to the customers on an extension for which advance payments were made, of a portion of this advance payment after a period of three years, in every case in which the actual revenue from the extension was found to exceed the estimated revenue. This rule was originally designed to discourage a possible practice of underestimating revenues, and placed particularly burdensome requirements on the utility in the matter of keeping a record of revenues from such extensions. In the new order this rule was amended to read that "any customer thereon may demand a statement of the revenues derived during that three-year period from the original customers or their successors on such extension," and provides that, if such revenues are found to exceed the estimated revenues, a refund shall be made to all the customers who had thus overpaid. This amendment simply relieves the utility of accounting for these revenues except on demand, and places the burden of taking the necessary steps to secure a refund upon the customer. In order that the customer may be apprised of his rights in the matter, the new order requires that the utility shall furnish each applicant with a copy of the rules.

Christmas Sales Aids Prepared by Electrical Society

The experience of all merchandisers has shown the necessity for planning early any special campaign that they purpose conducting. The majority of electrical retailers have had previous experience in putting on special campaigns to sell electrical gifts for Christmas and have already made all plans for this year's effort. Even at this late date there are opportunities for promoting sales-developing programs.

There are plenty of tools in the industry to assist in making the 1924 Christmas campaign a success. The manufacturers all have material that lends itself particularly to influencing selection of their product. The Society for Electrical Development has produced some special material which will work in with the manufacturers' helps.

This year the society is producing a window display background panel in seven colors, 34x60 in., carrying the slogan, "Give Something Electrical"—the one adopted by the industry for the year.

A set of nine Santa Clauses (four pointing to the right and five to the left), 6 in. wide by 8 in. high, with easel background, will also be another unit of this special material. Other pieces will consist of folders, booklets, poster stamp and wreath.

To assist in ordering, standard Christmas packages of material will be made up, consisting, for example, of one background panel, one set of nine Santa Claus cutouts, one set of three wreaths, 250 booklets and 250 poster stamps, which will be sold for $12.50. A standard package costing $10 will consist of the same quantities of material, but they will include folders instead of booklets. Still another package costing $3 will consist of one window display screen, a set of nine Santa Claus cutouts and a set of three wreaths.

Good Progress Is Made on Lake Cushman Power Project

In spite of several sudden floods that temporarily stopped work on the dam, good progress is being made on the Lake Cushman power project of the city of Tacoma, Wash. Construction camps, compressor plant, sand and gravel washing plant and concreting plant have been completed and put in service. At the middle of November concrete on the dam had been brought up to a height of about 65 ft. above the lowest point in the foundation; the tunnel which will convey water from the reservoir to the power house had been driven; some work had been done on the power-house site, and concrete foundations were being put in for the outdoor-type high-tension switches.

Present plans call for the placing of the concrete lining in the tunnel during the winter and for the continuation of work on the transmission line and high-tension switching installation, with the expectation of resuming operations on dam and power house as early in the spring as water conditions permit. It is expected that construction will be completed and the plant put in operation about Jan. 1, 1926.

The Lake Cushman project, located on the Skokomish River about 40 mi. northwest of Tacoma, involves a 275-ft. arch dam, a storage reservoir of 450,000 acre-ft., and a power house which will contain two 25,000-hp. reaction turbines to operate under heads ranging from 140 to 260 ft. A 6,200-ft. span across "The Narrows" is contemplated in the plans for the construction of the transmission lines, and a description of this feature of the project appeared in Journal of Electricity, May 15, 1924, p. 374.

Santa Clara County League Will Hold Dancing Party

The Electrical Development League of Santa Clara County will hold its second annual high jinks and dance at Ye House of Hoo Hoo, 12 mi. west of San Jose, Calif., on Friday evening, Dec. 5, 1924. An elaborate program has been prepared by the committee, and all members of the electrical industry will be welcome.

J. W. Squires, of the Pacific Gas and Electric Company, San Jose, is general chairman of the affair and is assisted by the following: J. M. Haydon, Pacific States Electric Company, San Francisco; Chester Hershey, Guilbert Bros., San Jose, and A. H. Noyes, Westinghouse Electric & Manufacturing Company, San Francisco.

California Wire & Cable Company to Erect New Plant.—The California Wire & Cable Company, Orange, Calif., owner of the California Wire Company and the California Cordage Company, has announced that it will erect a new factory at Pittsburg, Calif. The company has been appointed sole distributor of the copper wire products of the Columbia Steel Corporation, whose rolling and drawing mills at Pittsburg are the only ones on the Pacific Coast. To provide funds for the erection of the new plant, the company is offering for sale units of stock, comprising two shares of preferred stock and one share of common stock.

Local Electrical Leagues Council Organized at Meeting

Representatives of the local electrical leagues and of the Society for Electrical Development comprising the League Council elected in September at the third annual conference of local electrical leagues at Association Island, N. Y., held their first meeting at Cleveland, Ohio, on Nov. 17-18. This meeting was for the purpose of organizing the Council, so as to carry out the purposes of the so-called Whitehorne report, namely, that the Council represent the local electrical leagues of the United States and Canada and act in an advisory capacity to the Society for Electrical Development in its work of league service. Discussion in general reviewed the present needs of league service now being provided by the Society for Electrical Development at the request of the past league conferences, and established the necessary working arrangements with the electrical development organization to carry on the functions of league headquarters and league service under the service and guidance of the League Council.

The Council elected T. C. Russell, president of the Russell Electric Company, Chicago, and director of the Electric Club of that city, chairman; and as vice-chairman, Earl E. Whitehorne, commercial editor Electrical World, a director of the New York Electrical League, and chairman of the League Organization Plan Committee, which had originally been established to work out a plan for co-ordinating local league activities through some central organization.

The Council discussed in detail the problem of financing league service and development. After a full discussion and the appointment of a special committee to report back to the Council on the second day, this recommendation was passed by the Council:

> The question of financing local electrical business development naturally divides itself into two considerations: First, the national work that must be done to promote league development, and, second, the local business development programs carried out by leagues. The work of national promotion at the present time is being financed by individual subscriptions from manufacturers, central stations, jobbers and contractor-dealers through the Society for Electrical Development, and about one-third of the budget of the society is at the present time expended in the field work of league development and promotion and in services. The local work is financed principally by funds raised locally and in some small part in some cities through subscriptions from national sources.

The League Council also requested the society to undertake:

1. To prepare a report of its activities in league promotion for the year 1924, and a list of its services now available for the information of the several leagues.
2. To investigate the possibilities for league organization in all cities of the United States and Canada of over 100,000 population, and to promote the development of leagues in them as rapidly as possible.
3. To prepare a manual on league organization subject to the approval of the executive committee of the League Council.
4. To appoint a member of its staff to serve as secretary of the Council and to provide the necessary headquarters equipment. Kenneth A. McIntyre, who has had wide experience as supervisor of league and field work in the Society for Electrical Development, has been designated for this appointment.

The League Council endorsed the Red Seal Plan for the promotion of adequate wiring and recommended its adoption by the League. It also recommended that the name "Electrical League of (any city)" be adopted as a standard for new leagues, so as to lend itself more effectively to public acceptance and the possibility of tying in with co-operative national advertising.

Tie-In Between Puget Sound and Long-Bell Effected

Mutually benefiting both companies, a physical tie-in has been effected between the lines of the Puget Sound Power & Light Company, southern district, at Kelso, Wash., and the 18,000-kva. steam plant of the Long-Bell Lumber Company at Longview. The two towns occupy contiguous territory with a common city limits boundary on one side, so that the tie line is not long. Connection is made temporarily through a 1,500-kw. bank of 13,200- to 45,000-volt transformers situated on the mill site near the steam plant. The capacity of this bank is to be increased immediately to 3,000 kw., on the arrival of the proper transformers, and subsequently increased as conditions may warrant.

The tie-in arrangement between the two companies carries with it an exchange of power agreement. The town of Kelso is materially benefited since, through the tie-in, it now has a substantial power source on either side. On the other hand, the town of Longview will receive power from the system of the Puget Sound company in case it is necessary to shut down the Long-Bell steam plant for any reason.

Window Lighting Campaign Conducted in Pueblo, Colo.—The Southern Colorado Power Company and contractors of Pueblo, Colo., conducted a campaign in that city recently to establish new standards in commercial illumination. Two evening meetings were held at which the demonstration equipment of the Denver Electrical Cooperative Campaign was displayed by S. W. Bishop, executive manager of the Denver organization. An illustrated talk on window lighting was presented also.

Books and Bulletins

ELECTRIC RAILWAY HANDBOOK

By A. S. RICHEY, Consulting Engineer, Professor of Electric Railway Engineering, Worcester Polytechnic Institute. 832 pages. 600 illustrations. Pocket size. $4. McGraw-Hill Book Company, Inc., New York, N. Y.

Richey's "Electric Railway Handbook" is a small encyclopedia. It combines in convenient form the work of the civil, mechanical and electrical engineer in a fashion well adapted to be of assistance to an operating man, especially of properties not of sufficient magnitude to permit the establishment of extensive departmental organizations.

To the student who is preparing himself for an engineering career, it will be a valuable book of reference.

The busy engineer who is in need of information out of his special line will find it useful to give him a lead toward the sources of more detailed information.

Its sections cover Roadbed and Track, from location to finished track and its maintenance; Car Houses and Shops, design and protection; Train Movement, schedules, resistances, power and energy requirements; Motors; Control Apparatus; Current Collection; Trucks; Braking, computations, adjustment, maintenance and mechanical details; Cars, design of various types, heating, ventilation and lighting; Power Transmission and Distribution, trolley and feeder construction and computations, electrolysis, negative return systems; Signals and Communication.

It is not an exhaustive treatise on any subject; hence it is not particularly useful to the expert who has need for information in his own field. At the same time, one would have to be really ingenious to miss finding, in its pages, good information upon any practical subject in electric railway practice outside of the power house and substations. These subjects are not mentioned.

A. H. Babcock.

WHO'S WHO IN AMERICA

Vol. 13, 1924-25. $7.75. A. N. Marquis & Company, Chicago.

The issuance of the volume under review marks the twenty-fifth anniversary of the appearance of this useful book of reference. Growth has been rapid, and 25,357 biographies are given in the present edition, 2,774 of which are new. The total represents one out of each 4,800 of the total population of the United States. It is worthy of note that the publishers are careful in conserving space by deleting more than brief reference to notables who have retired from active work, whose biographies will be found in former editions.

An interesting feature of the book is the compilation of statistics relating to the educational opportunities of the persons mentioned. Of those who furnished such data, 77.36 per cent attended a university, 7.13 per cent attended academies or other secondary schools, 1.64 per cent attended normal schools, 5.35 per cent attended high schools and 8.52 per cent attended common or public schools. Of the total, 25.9 per cent were born on farms, 24.5 per cent in villages or small towns, 24.8 per cent in small cities, 20.6 per cent in large cities and 4.1 per cent in the suburbs of large cities.

"Who's Who in America" contains a geographical index and a guide to the pronunciation of proper names. It contains a mass of personal information that will be found of considerable value in the everyday life of the average citizen, as well as to those who need accurate information in regard to the careers of prominent contemporaries.

DEPARTMENTAL AND STANDARD COSTS

By WILLIAM S. KEMP, treasurer the Holtzer-Cabot Electric Company, Boston, Mass.

In the presentation of this work, Mr. Kemp has supplied a most urgent need and has outlined clearly a cost-accounting system that will be of benefit to all branches of the electrical industry. The greatest value of the work lies in the fact that all the principles set forth have proved up successfully under practical application in an extensive business organization. F. V. M.

Meetings

Plans for Cooperative Campaign for 1925 Are Outlined

General discussion of the program of development to be adopted by the California Electrical Cooperative Campaign for the calendar year 1925 and the adoption of a $50,000 budget for the year featured the meeting of the advisory board of that organization held at the Palace Hotel, San Francisco, on Nov. 18. R. E. Fisher, chairman of the board, presided at the meeting. In addition to members of the advisory board, a number of representatives of central stations and contractor-dealers from both the northern and southern sections of California were in attendance.

After a general discussion it was determined that among the major developments to be undertaken would be the promotion of the construction of eighteen or twenty $7,000 to $8,000 electric homes, to be built in cities and towns apportioned equally between the southern and northern sections of the state. The services of the Campaign in this regard will consist of promoting the general idea in each locality through the services of the Campaign field men and the furnishing of plans, specifications and other data to those communities interested.

The publication of a data book in a first edition of 10,000 copies was authorized. The text for the data book has been under consideration by a committee for some time and will carry clear, concise data dealing with all of the major electrical appliances and setting forth the utility and applicability for domestic use.

It was determined that, so far as a special Christmas sales effort was concerned, there should be no high-pressure drive on the part of the Campaign as such, but that the industry in general would receive the assistance of the Campaign in helping to bring about the most efficient use of material already available from manufacturers.

A general expression of approval was given to the Red Seal Plan campaign of the Society for Electrical Development. Arrangements will be made for the use of the Red Seal. In this connection, L. R. Chilcote suggested that the Campaign prepare a contractor's handbook similar to that of the Electric League of Cleveland. This book would be designed to assist the contractor to sell adequate wiring in the home. That the Campaign should foster the installation of adequate feeders in all homes was the contention of F. H. Woodward, who believes that in this way obstructions to the installation of electric ranges and other large current-consuming devices would be removed.

In connection with plans for the coming year, it was proposed to inaugurate an adequate window-lighting exhibit and to continue the customary work in connection with June Bride Week, as heretofore. Cooperation will be given to the work of the Electric Transportation Bureau. After carefully considering the advisability of undertaking the preparation of a motion picture that would set forth the advantages of electricity in the home, it was moved to lay this proposition on the table for further consideration a year from now.

It was believed that, in order to follow up the publicity and element of good will created through the Better Home Lighting Contest, it was advisable to develop and undertake a comprehensive kitchen lighting campaign. Discussion brought out the fact that the lighting equipment in the average kitchen seldom was better than one 25-watt lamp. It was believed that a 150-watt unit could be sold at a cost of $6.50, including commission to the salesman, and that installment plan purchases could be inaugurated providing for payments of $1 down and 50 cents a month. This matter is to be brought to the attention of central stations so that in cooperation with the Campaign this movement may be inaugurated as quickly as possible.

The advisability of close cooperation between the Campaign and the various bureaus of the Commercial Section of the P.C.E.A. was pointed out and emphasized. Since the work of the two closely parallels, each could supplement the labors of the other and prevent duplication of effort.

After the adjournment of the open meeting, a closed meeting was held at which a budget for 1925 was adopted aggregating a minimum of $50,000. A finance committee consisting of A. E. Wishon, chairman, D. E. Harris and C. T. Hutchinson was appointed to provide funds for continuing the work.

Utah Governor-Elect Addresses Salt Lake Engineers

George H. Dern, who was recently elected governor of Utah, was the principal speaker at the regular weekly luncheon of the All-Engineers' Club held at the Chamber of Commerce at Salt Lake City, Utah, on Nov. 17. Mr. Dern, who is a mining engineer, touched briefly on his proposed program in fulfilling the duties of his new office.

On the subject of engineers and engineering work, Mr. Dern pointed out the desirability of engineers taking a more active part in public life. "If engineering is applied common sense," he said, "then we need more engineering all down the line, including governmental affairs. The engineer is trained to think straight, and to be influenced by nothing except cold facts. Straight thinking and straight acting will increase governmental efficiency." He advised engineers not to stand aloof and find fault, but to render better service by getting in and helping.

Work on Hetch Hetchy Transmission Line Progresses Rapidly.—Sixty-seven per cent of the steel transmission towers for conveying current from the Moccasin Creek power house to the city of San Francisco had been erected on Nov. 25. Conductors are being strung on the lower end of the line, and crews stringing conductors are scheduled to start on the upper end about Dec. 1. Dependent somewhat upon weather conditions, the date now set for the completion of the line is March 1, 1925. Steel-core aluminum conductors are used on the upper end of the line, and hemp-core copper cables are being installed on the lower end. The steel towers being used are 98 ft. high, and the lowest crossarm is 62 ft. from the ground.

Discuss Adoption of a New Term for Convenience Outlet

Discussion concerning the adopting of a new term for the device known as a "convenience outlet" occupied an important position on the program of the meeting of the advisory publicity council of the Society for Electrical Development held on Nov. 11. The subcommittee, appointed at a previous meeting to consider the question, reported that, while considerable study had been made, no satisfactory solution was ready to be advanced at that time.

An expression of opinion was asked from every member of the council present, and all admitted that the term "convenience outlet" was not in any sense satisfactory and felt that if the industry is to get a term which will be acceptable to the public, it must permit the public to have something to say in the final selection of the popular nomenclature of this device. All were of the opinion also that, while the term "convenience outlet" may not be entirely satisfactory, the industry having used it in millions of pieces of literature and advertised it in hundreds of thousands of dollars' worth of newspaper space, it is inadvisable to change to any other definitive term unless it is acceptable to the whole industry and to the public.

A campaign that had been conducted in Philadelphia, designed to find out what the public called the device and to see if any term offered suggested a solution was described, and it was suggested that a poll be made of visitors to electric homes and other exhibitions conducted by the industry, with a view to learning the preference of the general public.

It was decided to continue the special subcommittee further to consider this subject and report at the next meeting. In the meantime, the industry is to be asked through the electrical trade papers and other mediums not to consider making a change until a term has been selected which meets the approval of the whole industry and behind which the industry can conscientiously put its weight. The council will welcome any suggestions that might be offered. Send them either to the Journal of Electricity or to the Society for Electrical Development, 522 Fifth Ave., New York.

Among other subjects discussed by the council was the report of a subcommittee appointed to investigate the method of budgeting advertising by central station companies and the changes in the by-laws of the society, particularly with reference to that section which deals with the fact that companies can subscribe in any amount to the society's work. Individual memberships are authorized by a recent change.

COMING PACIFIC COAST ELECTRICAL ASSOCIATION MEETINGS

Technical Section—
San Francisco, Calif.
Jan. 7-9, 1925

Change Made in Capitalization of Utah Company.—Amended articles of incorporation, increasing the capital stock of the Utah Power & Light Company, Salt Lake City, Utah, from $60,000,000 to $65,000,000 have been filed in the office of the secretary of state of Utah.

Manufacturer, Dealer and Jobber Activities

The Coffield Washer Company, Dayton, Ohio, has published a folder, "The Five Fundamentals," designed to outline briefly the five fundamentals on which the company's retailing methods are based. The details of these basic principles are completely covered in a book, "Retailing the Coffield," which may be obtained upon application to the company or the nearest factory representative.

The Lionel Corporation, New York, N. Y., manufacturer of miniature electric trains, has developed a new automatic train control, which takes the form of a signal tower with red and green lights. As the train approaches, the light changes from green to red and the train stops. After a few seconds, the light again shines green and the train resumes its journey. A controller has been placed on the device so that, at the will of the operator, the train may pass the block, in which event the light shows green at all times.

Du Pont Household Appliance Company, 854 South Hill St., Los Angeles, Calif., recently changed hands, and is now being managed by Dodd Mauldin, former secretary and sales manager of the Cleveland Armature Works, Cleveland, Ohio. The business will be conducted under the same firm name and will feature a complete line of washers, vacuum cleaners and general household appliances.

The General Electric Company, Schenectady, N. Y., recently issued Bulletin No. 47731, "Automatic Station Control Equipments." It describes briefly the uses and advantages of this type of equipment, and is well illustrated. The greater part is given over to a list of installations up to Jan. 1, 1924, giving the name of the company, station, type of apparatus, kilowatt capacity and incoming and outgoing voltage.

The Reynolds Electric Company, Chicago, Ill., has announced a flasher which incorporates in its construction the company's latest method of transmission through the use of spur gears. The motor is equipped with an idler pulley to take up the slack in the belt.

Frank P. Fahy, New York, N. Y., has issued a pamphlet, "Fahy Simplex Permeameter," descriptive of the Fahy permeameter, an instrument designed for the determination of the inherent magnetic properties of materials. The first half of the booklet is devoted to magnetic testing and magnetic characteristics, and the rest to a description of the instrument.

The O. C. White Company, Worcester, Mass., has issued a catalogue insert describing its sewing machine lighting fixture, style 1SM. It is adjustable and detachable and made to clamp upon any standard sewing machine. Primarily intended for domestic machines, it may be adapted to larger power machines by varying the size of the strap clamp.

F. Hackleman & Company, electrical contractors, Seattle, Wash., secured the contract for wiring the proposed hotel to be built on Second Avenue and Battery Street by A. S. Hainsworth.

Courteous Service Club Contests Are Announced

$$$$$ For Your $MILE$ $$$$$

Two contests are being conducted by the Courteous Service Club Committee of the Pacific Coast Electrical Association. Fifty dollars in cash is to be distributed among the prize winners in these two contests which are being conducted by the Courteous Service Club. To enable more individuals to enter the contest, the closing date has been changed from Dec. 1 to Dec. 18, 1924.

Here are the two contests:

Contest I

Twenty-five dollars in prizes to be awarded for the best slogan, of not over ten words, for use by the Courteous Service Club during 1925. The first prize winner will receive ten dollars; the second, five dollars; and the third to sixth inclusive will each be awarded two dollars and fifty cents.

Contest II

For the best true story of not over two hundred (200) words in length illustrating the application of courtesy by an employee, the Courteous Service Club Committee of the Pacific Coast Electrical Association will award a first prize of ten dollars. A second prize of five dollars will be given for the second best story and the persons who submit the stories which shall be adjudged to rank from third to sixth best will each receive two dollars and fifty cents.

Anyone, except the members of the Courteous Service Club Committee and their immediate families, shall be eligible for participation in the contest.

The names of the winners, together with the winning contributions, will be presented in the Jan. 1, 1925, issue of the Journal of Electricity. Enter the contests now by sending your entry to Courteous Service Club, c/o Journal of Electricity, 883 Mission Street, San Francisco, Calif.

Contest Rules

The rules for the two contests are the same and are as follows:

1. The contest is open to anyone except members of the Courteous Service Club Committee of the Pacific Coast Electrical Association and their immediate families.
2. In Contest I the slogans submitted must be of ten words or less. In Contest II stories must be true and of two hundred words or less in length.
3. The judges will be the members of the Courteous Service Club Committee of the Pacific Coast Electrical Association and are as follows:

R. A. Balzari, Westinghouse Electric & Manufacturing Company; Victor Hartley, California Electrical Cooperative Campaign; M. S. Barnes, General Electric Company; G. C. Tenney, Journal of Electricity; H. L. Bronley, The California Oregon Power Company; O. S. Clifford, Truckee River Power Company; S. W. Green, San Joaquin Light & Power Corporation; E. G. McCann, Pacific Gas and Electric Company; Lloyd H. Hardy, Great Western Power Company; R. E. Smith, California Electrical Cooperative Campaign; Wm. Cyr, San Diego Consolidated Gas & Electric Company; E. B. Cummings, Southern California Edison Company; R. E. Bacon, Southern California Edison Company; W. A. Knost, Electric Club, Los Angeles; D. L. Scott, Los Angeles Gas & Electric Corporation.

4. Prizes to be awarded separately in each contest are as follows: First prize, ten dollars ($10); second prize, five dollars ($5); third to sixth prizes, inclusive, two dollars and fifty cents ($2.50) each.
5. In case of tie the full amount of the prize will be awarded to all of the tying contestants.
6. Entries are to be sent to Courteous Service Club c/o Journal of Electricity, 883 Mission Street, San Francisco, Calif.
7. Entries must be received before midnight of Dec. 18, 1924.
8. Prizes will be announced in the Jan. 1, 1925, issue of the Journal of Electricity and the winning contributions will be published in that issue.
9. No entries will be returned to contestants and the right of the Courteous Service Club to use slogans and stories shall be conceded upon filing of entry.

Personals

G. R. Henninger, for the past year operating assistant to the protection engineer of the Southern California Edison Company, Los Angeles, Calif., has

G. R. HENNINGER

been appointed associate editor of the Journal of Electricity and will take up his duties Dec. 1. Mr. Henninger has had about seven and a half years of public utility experience. Of this time, five years have been spent as an operator of transmission and distribution substations and a downtown d.c. central station, and a year and a half devoted to the study of portions of the systems of several large Eastern and Middle Western utilities and two Pacific Coast utilities other than the Edison company. He has specialized in work relative to the design, application and operation of protective equipment, and in his capacity as operating assistant to the Edison company's protection engineer was responsible for the maintenance and operation of the entire protective relay system of that company's stations. Mr. Henninger was graduated from the University of Southern California with the degree of bachelor of science in electrical engineering.

A. C. McMicken, sales manager of the Portland Electric Power Company, Portland, Ore., attended the meeting of the Commercial National Section, held at San Rafael, Calif., Nov. 19-21. Mr. McMicken, as chairman of the electric cooking and heating committee, directed one of the meetings notable for the interested discussion.

H. H. Courtright, president and manager of the Valley Electrical Supply Company, Fresno, Calif., was a recent visitor to San Francisco.

Col. H. G. Winsor, Tacoma, Wash., has been appointed by the Puget Sound Power & Light Company, Seattle, Wash., personnel officer, a newly created position, effective Dec. 1.

R. J. Moore, president and manager, Yamhill Electric Company, Newberg, Ore., recently journeyed from the North to attend the conclave meeting of the Commercial National Section of the N.E.L.A. at San Rafael, Calif.

C. E. Greenwood, Edison Electric Illuminating Company, Boston, Mass., is chairman of a subcommittee of the electric cooking and heating committee of the Commercial National Section that is working on the revision of wiring standards as they affect the installation of electric ranges and water heaters.

Ray W. Turnbull, assistant Pacific Coast sales manager of Edison Electric Appliance Company, Portland, Ore., visited Spokane, Wash., Nov. 24-29, inclusive, on general sales matters.

P. S. George, of the Coast Valleys Gas & Electric Company, Salinas, Calif., attended the meeting of the Commercial National Section, held at San Rafael, Calif., Nov. 19-21.

L. M. Klauber, general superintendent, San Diego Consolidated Gas & Electric Company, San Diego, Calif., spent several days in San Francisco during the latter part of November.

Lewis A. Lewis, sales manager, Washington Water Power Company, Spokane, Wash., during the session of the electric cooking and heating committee at the Commercial National Section's recent conclave meeting, reported on the Northwest electric range survey. The survey is being made under the direction of **H. L. Melvin,** electrical engineer, Washington Water Power Company, Spokane, Wash.; **F. J. Rankin,** chief engineer, Idaho Power Company, Boise, Idaho, and **M. T. Crawford,** superintendent of distribution, Puget Sound Power & Light Company, Seattle, Wash.

Horace Cline, treasurer of the Los Angeles Gas & Electric Corporation, Los Angeles, Calif., has been made a member of the directorate of that company. Mr. Cline's connection with the concern began in 1891 as a bookkeeper for the Los Angeles Lighting Company, which was later reorganized as the Los Angeles Gas & Electric Corporation. During his service with the utility he has held various positions, among them that of collector, paymaster and assistant treasurer. He has served as treasurer for the last eight years.

T. F. Kennedy, H. L. Doherty Company, New York, was among the Easterners in attendance at the N.E.L.A. Commercial National Section's conclave meeting held recently at San Rafael, Calif.

W. N. Sproule, president, Southern Pacific Company, San Francisco, Calif., made an address at the recent annual convention of the National Association of Railway and Utilities Commissioners at Phoenix, Ariz.

C. D. Se Cheverell, assistant to the president, Central Power Company, Grand Island, Neb., attended the recent conclave meeting of the Commercial National Section of the N.E.L.A. at San Rafael, Calif.

C. D. Jackson, counsel for the National Electric Light Association, attended the annual convention of the National Association of Railway and Utilities Commissioners at Phoenix, Ariz., Nov. 11-14, and was one of the speakers.

Paul Overton, general counsel for the Los Angeles Gas & Electric Corporation, Los Angeles, Calif., has been elected a member of the board of directors of that corporation. Mr. Overton entered the employ of the company in 1904 as stenographer. Since that time he has served in the capacities of clerk, special agent and assistant general counsel.

Clyde L. Chamblin, president of the California Electrical Construction Company, San Francisco, Calif., has been nominated as a director, two-year term, from the Pacific Coast of the Association of Electragists, International.

James H. Boyer, Grant D. Miller and **Alfred Latham** were recently re-elected to the directorship of the East Bay Municipal Utility District, Oakland, Calif. They will serve for four years. **David P. Barrows** and **George C. Pardee,** the newly elected members, will serve for two years.

Percy P. Pine, San Diego Consolidated Gas & Electric Company, San Diego, Calif., represented that company at the conclave meeting of the Commercial National Section of the National Electric Light Association held at San Rafael, Calif., the latter part of November.

P. M. Parry, commercial manager, Utah Power & Light Company, Salt Lake City, Utah, gave a detailed description of the organization and functioning of a lighting service bureau at the recent conclave meeting of the Commercial National Section of the N.E.L.A. at San Rafael, Calif.

George R. Randall, Salt Lake City, Utah, has been nominated to be a director, for one year from the Rocky Mountain section, of the Association of Electragists, International.

Judge C. E. McLaughlin was recently elected president of the board of directors of the Sacramento Utility District, Sacramento, Calif. **Robert L. Jones** was re-elected vice-chairman. **Albert Givan,** formerly city engineer of Sacramento, was renamed general manager and chief engineer of the district.

G. T. Lundlee of the G. T. Lundlee Company, Sacramento, Calif., recently was elected president of the Sacramento Valley Electrical Society of that city. Mr. Lundlee has been engaged in the electrical business for ten years, his first venture having been made in Tonopah, Nev., in 1914, where he specialized in automotive appliances. He sold this business in 1919 and went to Sacramento, where he opened a store dealing in electrical automotive devices. The company of which Mr. Lundlee is the head represents fourteen manufacturers of electrical goods and makes a specialty of magnetos. Mr. Lundlee has always been an active worker in the Sacramento Valley Electrical Society, and is a prominent member of the Rotary Club and other civic organizations.

G. T. LUNDLEE

W. R. Putnam, vice-president and general manager of the Idaho Power Company, Boise, Idaho, and chairman of the Commercial National Section of the National Electric Light Association, presided at the conclave meeting of that body, held at San Rafael, Calif., Nov. 19-21. Mr. Putnam also took part in the various committee discussions and contributed largely of his rich experience in utility matters.

J. W. Squires, of the Pacific Gas and Electric Company, San Jose, Calif., is general chairman of the committee of the Electrical Development League of Santa Clara County for the arrangement of the details of the annual dance and high jinks to be held Dec. 5.

Frank A. Leach, Jr., vice-president and general manager, Pacific Gas and Electric Company, San Francisco, Calif., was one of the speakers at the general conference of the Commercial National Section's conclave meeting.

E. C. Headrick, Denver, Colo., has been nominated to be a director, from the Rocky Mountain district for one year, of the Association of Electragists, International.

C. C. Munroe, Detroit Edison Company, Detroit, Mich., in his capacity of chairman of the lighting committee of the N.E.L.A. Commercial Section, was present at the recent conclave meeting held by the section at San Rafael, Calif., Nov. 19-21.

J. H. Jamison, merchandise manager of the Westinghouse Electric & Manufacturing Company, Los Angeles, Calif., attended the meeting of the Commercial National Section held at San Rafael, Calif., on Nov. 19-21. Mr. Jamison contributed to the discussions of the appliance committee.

W. N. Clark was recently appointed general manager of the Southern Colorado Power Company, Boulder, Colo. Mr. Clark has been superintendent of the Mountain Division of the company since 1911 and in his new position succeeds W. F. Raber, who has been made general manager of the San

W. N. CLARK.

Diego Consolidated Gas & Electric Company, San Diego, Calif. Mr. Clark graduated from the University of Illinois and began his public utility service in 1889. He has been associated with the Byllesby interests for the past several years, and has occupied various positions in that organization, coming to his new position with a fund of valuable utility experience.

W. H. Talbott, president of the Employees' Association of the San Diego Consolidated Gas & Electric Company, San Diego, Calif., was recently nominated without opposition as a candidate for a second term. **Roger Ruffin,** incumbent vice-president, was also renominated without opposition. Both are expected to be elected by acclaim at the next meeting of the association to be held in December.

J. F. Orr, of the Idaho Power Company, Boise, Idaho, attended the meeting of the Commercial National Section held at San Rafael, Nov. 19-21, and participated in the various committee discussions.

Prof. B. D. Moses, of the University of California, has been assigned to an investigation for the purpose of furthering the agricultural application of electricity and determining to what extent it may be so applied economically. This will constitute the contribution of the university to the work of the N.E.L.A. Commercial National Section's Committee on the Relation of Electricity to Agriculture.

H. C. Rice, of the Southern California Edison Company, attended the meeting of the appliance committee of the Commercial National Section, held at San Rafael, Calif., Nov. 19-21.

A. Jackson Marshall, secretary of the National Electric Light Association, New York City, recently visited San Francisco, Calif., to attend to details in connection with the annual convention of the association to be held in June, 1925. Mr. Marshall also attended the meeting of the Commercial National Section, held at San Rafael, Nov. 19-21, and offered many valuable suggestions at the various committee meetings.

M. H. Aylesworth, executive manager of the N.E.L.A., was one of the principal speakers at the annual convention of the National Association of Railway and Utilities Commissioners held at Phoenix, Ariz., Nov. 11-14.

A. H. Babcock, electrical engineer, Southern Pacific Company, San Francisco, Calif., spoke on "The Present Situation in Mexico" at a recent meeting of the Commonwealth Club.

R. A. Balzari, manager industrial department, Westinghouse Electric & Manufacturing Company, San Francisco, Calif., described in detail the Courteous Service Club during the session of the Customer Relations Committee at the conclave meeting of the Commercial National Section.

Bert Rowley, Salt Lake City, Utah, district manager of the Edison Electric Appliance Company, Chicago, Ill., recently spent some time in Denver, Colo., on business for his company.

Fred R. Jenkins, of the Commonwealth Edison Company, Chicago, Ill., attended the Commercial National Section meeting held at San Rafael, Nov. 19-21. Mr. Jenkins presented an outline of the educational courses that have been prepared under his direction and solicited the support of central station executives.

Z. E. Merrill, of the Mountain States Power Company, Albany, Ore., attended the meeting of the Commercial National Section held at San Rafael, Calif., Nov. 19-21.

N. J. Etienne, engaged in the handling of radio equipment in Los Angeles, Calif., paid a visit to San Francisco during the latter part of November.

Charles H. Thrane has recently been appointed district sales manager, Los Angeles, Calif., district, Pacific States Electric Company, and as such will have charge of all sales in that territory, reporting directly to Frank J. Airey, district manager. Mr. Thrane has been connected with the Pacific States Electric Company as salesman for the past four years, prior to which time he was connected with Pierson, Roeding and Company of San Francisco and Los Angeles. Mr. Thrane is a native of Berke-

CHARLES H. THRANE

ley, Calif., having attended grammar and high schools in that city, and entered the electrical business at the age of seventeen. His elevation to the position of sales manager of the Pacific States Electric Company is a reward of accomplishment during the years he has been with that company.

Dr. E. A. White, chairman, National Committee on the Relation of Electricity to Agriculture, made an interesting report of the work of the committee at the recent conclave meeting of the Commercial National Section held in San Rafael, Calif.

Obituary

Louis Glass, president of the Philippine Telephone & Telegraph Company, and for twenty years connected with the Pacific Telephone & Telegraph Company and its subsidiaries, died in San Francisco, Calif., Nov. 12, at the age of 79. He began his career as a telegraph operator with the Western Union Company, where he remained until 1879, when he acquired an interest in the Oakland and San Diego telephone companies. From that time on he devoted himself to the development and expansion of the telephone industry. In 1905 he formed the Philippine Telephone & Telegraph Company, becoming its first president, and in 1912 withdrew from active service with the Pacific Telephone & Telegraph Company to give his entire time to the Philippine company. Mr. Glass was one of the originators and developers of the "express switchboard," and he also made the first installation of the harmonic party-line system for selective party-line service.

Trade Outlook

San Francisco

A steady improvement in conditions in the electrical industry is in evidence in San Francisco and the bay territory. Exceptionally good business is reported by the retail trade. Holiday buying is getting well under way; the initial sales volume is particularly encouraging, and there is every prospect that the final total will be entirely satisfactory. An indication of the present activity in electrical construction work is the fact that schedule material is moving fast and evenly. There is an increasing volume of certain plugs and snap and flush switches for incorporation in manufactured articles. Excellent sales of radio and radio equipment are reported, with an increasing demand for higher-priced sets. As a whole, the outlook for the future is extremely encouraging.

In other lines of business, improvement is reported. The volume of cash buying, on the whole, is good; collections are regarded as fair. Establishments that handle holiday goods report increasing activity, with encouraging outlook for a final satisfactory total.

Leading jewelry jobbers state that their sales are running ahead of those obtained for the same period last year, with buying quite active. Silverware, clocks and watches lead the sales. Salesmen report a disposition on the part of country stores to buy on a larger scale than formerly.

Denver

Electrical jobbers in this territory report an unusual demand which promises a record holiday business. The idea of an electrical Christmas is being stressed by the industry, and encouraging results have been obtained already in appliance and radio lines.

Data compiled from bank clearings, postal receipts, building permits, industrial reports and employment conditions showed a real cause for thanksgiving and revealed the unusual prosperity of Denver and its position as the financial and business center of the Mountain region.

Bank clearings averaged 5 per cent over the same period last year, while postal receipts increased 9 per cent in November. Unusually fine weather has permitted a continuation of the record building program. Another indication is the amount of the cattle receipts at the Denver stockyards that broke all previous records on two succeeding days. All these factors, coupled with the outcome of the national election, have tended to produce a strong feeling of optimism in this section.

Los Angeles

The situation which has developed in this city and surrounding territory is representative of the conditions of the electrical industry, retail sales showing a decided improvement, and it may be well stated that business in general at this time is good. Appliances, both heating and major devices, reflect this business activity, and increase is reported also by the radio departments of the various electrical stores. Music stores, department stores and others handling radio apparatus report excellent business conditions prevailing, with sales increasing rapidly and with a scarcity of certain makes of radio equipment.

Jobbers and wholesalers in this territory report increased business, with present conditions highly satisfactory. Relief and satisfaction are being expressed that the severe slump which was experienced during the summer months seems to be at an end.

In the last few weeks manufacturing business has picked up, and manufacturers and manufacturers' representatives in this territory report orders rapidly coming in.

The building industry is not quite up to the same period last year, but it has increased considerably over the low peak of the summer months. Labor is finding employment, and that situation is not serious at the present time.

Seattle

Christmas buying is active in this district, Seattle electrical jobbers report, with a particularly brisk movement of percolators, toaster stoves, waffle irons and tree outfits. Dealers anticipate an especially satisfactory final sales volume. Reports from outlying towns in rural districts are encouraging, with washing machines, vacuum cleaners and other household appliances in increasing favor. Replacements in all lines are becoming harder to obtain as the season advances. Prices are tending upward.

In other lines of industry there is a general improvement, and confidence that the present volume will continue is expressed by business men.

Unusual activity is being manifested in jewelry circles. The withholding of orders by retailers until the beginning of the pre-holiday season has resulted in flooding the manufacturers with orders. A high percentage of this work consists of special orders by customers through retailers. Pendants and charms, silver plate and quality watches are selling in good volume. Wholesalers report collections have been slow for several months, but retailers have few complaints to make in this regard. A good volume of business is being done by credit houses, whose collections are fair. Department stores and other concerns handling holiday goods report the Christmas trade has started vigorously.

Salt Lake City

The termination of election uncertainties has resulted in business men of this section looking forward to an improved outlook for business expansion. Merchants generally report a fair amount of activity in business, with a favorable outlook for Christmas trade. Collections are reported as being somewhat slow, due principally to the season of the year.

Electrical interests are planning increased activity in educational work along the lines of better home lighting, as a follow-up of the Home Lighting Contest. There is a small amount of early Christmas shopping now under way, and from all indications the volume of this business will be greater than that of last season, and electrical gifts more popular than ever.

Coal production from Utah coal mines is showing an appreciable increase, due to the colder weather demand. The benefit of moderately heavy snowfall in the agricultural sections and over the immediately adjacent winter ranges has been an important favorable factor in the agricultural situation.

The wool industry is on a sound basis, and wool buyers report the contracting of approximately 8,000,000 lb. of the 1925 clip in Wyoming, Idaho and Utah, at prices ranging from 40 to 43¼ cents per lb.

Spokane

Retail trade has shown strong imimprovement since election, and a splendid holiday business is expected in all lines. The local electrical contractor-dealers are taking advantage of the home lighting contest to stimulate sales in lighting fixtures. Local building operations are confined principally to dwellings. In one neighborhood a group of fourteen small dwellings is being built, and each house will be wired for electric range and water heater.

Mining conditions in the Inland Empire are excellent, with practically all silver-lead properties operating at capacity. One of the larger companies has just announced the distribution of a substantial dividend for December.

Heavy snowfall in the woods during the last two weeks has led to the suspension of many logging operations. Local lumber plants report splendid prospects for the coming year, and orders have already begun to increase since election. One of the local operators has announced that his planing mill will be doubled in capacity and that a sawmill, shut down for a year, will resume operations within a month. An oversupply of labor in Spokane is noted, due largely to the decrease in logging operations. This is a seasonal condition.

Portland

A decidedly optimistic feeling exists in business circles following the elections. Already the larger companies are placing heavy orders with manufacturers, anticipating possible price advances.

The lumber market has reacted favorably, and numerous orders have been placed, one of the best features being the revival in the buying of car materials. Some increases in prices are reported.

Power companies, which before the election were carrying loads of 8 to 10 per cent greater than a year ago, now find it necessary to supply 12 to 15 per cent over last year. The electrical trade in most lines is good, and everything seems to point to a large holiday trade. The Portland Electric Power Company will add nearly 1,800 ranges to its load this year.

Winter wheat prospects in Oregon have improved since the rains, and if the temperatures continue favorable the crop should have a good start. The Oregon apple crop has been moving out well, particularly from the Hood River district.